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RICHARD P. ROTHWELL, C.E, M.E.
ROSSITER W. RAYMOND, Ph.D., M.E. } Editors.

Cable Address: "Rothwell," New York.

Books for review and all communications for the JOURNAL should be addressed, Managing Editor, P. O. Box 1833, New York.

Communications for Mr. RAYMOND should be addressed to ROSSITER W. RAYMOND, P. O. Box 1465, New York. Articles written by Mr. Raymond will be signed thus *; and only for articles so signed is he responsible.

London Office: Finsbury Chambers, 76 Finsbury Pavement, London, E. C. Mr. Thomas B. Provis, Civil and Mining Engineer, Manager.

Mexico: Mr. R. E. Chism, M. E., Callejon Espirito Santo No. 4, City of Mexico.

Peru, South America: Mr. John Newton, No. 2 Calle Constitucion, Calla.

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AN illustrated price list of goods for export, giving export discounts, is mailed with this issue of the ENGINEERING AND MINING JOURNAL.

THE Sacramento *Bee* has been crediting the ENGINEERING AND MINING JOURNAL with statements on the subject of the policy of the California State Mining Bureau with respect to the débris question which never appeared in these columns. If Mr. IRELAN, the able head of the bureau, and the Sacramento *Bee* will kindly refer to our editorial of September 14th, which is the only allusion made to the State Mining Bureau's connection with the question, they will see that we said: "In brief, the intention of the bureau is to arrive at all the facts possible connected with this once vast industry." So far as we can understand the *Bee*, this is exactly what Mr. IRELAN says.

THE market value of ounces of fine silver produced and of silver in ore exported from the Colony of New South Wales last year (1888) was $5,512,025. This amount will show a very large increase in the present year, as the number of fine ounces produced by three companies in the month of July was 721,412, or at the rate of 8,656,944 ounces per annum, without taking into account ore shipments, and even this rate of production is likely to be still further increased before the end of the year, as two of the principal companies are adding to their smelting capacity, thus showing their mine production to be in excess of their means of reduction. Add to this the new developments in the Broken Hill district already mentioned in our issue of October 12th, and fresh discoveries of importance near Kangarilla, South Australia, since announced, and in which the ore body is represented to have a thickness of 38 feet and an average value of 50 ounces, and it is quite clear that our estimate in our issue of October 5th, of a production of 10,000,000 ounces a year from Australia, is not excessive. The lead production of Australia also becomes interesting, as in July the three Broken Hill companies that are smelting produced 3,737 long tons of lead bullion or at the rate of 50,225 tons of 2000 pounds a year, to which must be added something for outside companies and districts and for South Australia.

THE PANAMA CANAL.

The liquidator of the Panama Canal wreck, M. BRUNET, tried to impart some comfort to the unfortunate and dejected bondholders who attended the meeting recently in Paris by announcing the formation of a Commission of Engineers to investigate and report upon the actual position of the undertaking. On this commission, in addition to the French members, there are three foreign engineers, viz., one English, one Belgian and one Dutch.

Since then the first sitting has been held, under the presidency of Inspector-General GUILLEMAIN, the director of the Ecole des Ponts et Chaussées, and the preliminary work commenced, a series of questions drawn up by the liquidator being submitted for examination; but not the slightest public interest is shown in the attempt to resuscitate the canal scheme.

Meanwhile the *Moniteur Industriel* reminds its readers that chief engineer, M. DE LEPINAY, at the International Congress in 1876, had urged the adoption of a lock-canal with the formation of an artificial inland lake of 6,000 hectares area, and that M. EIFFEL and many other distinguished engineers supported this view. M. DE LEPINAY'S words at the time were remarkable in their prophetic spirit when called upon to vote on the question of the sea-level canal, "In order not to have the charge on my conscience of these useless deaths (sacrificed in an attempt to cut a sea-level canal) and the loss of an enormous capital, I abstain from voting or I vote in the negative."

LESSONS IN IRRIGATION.

The Senate Investigating Committee may be expected to add something to our knowledge of irrigation as practiced in this country, and conjointly with Major Powell's report may give us some idea of what further opportunities there are for development in this direction when undertaken in a comprehensive and systematic manner. In our issue of September 28th we gave some reliable facts and figures, showing what great results, direct and indirect, had been accomplished by the government of India in the Punjaub, and we hope soon to present to our readers complete statistics of the work of irrigation in the entire Indian Empire, which will be still more valuable at the present time when the question of a national scheme of irrigation is to be considered.

All the information that can be obtained regarding so important a matter is of value, and it is well to turn to Egypt, where the entire agricultural prosperity of the country is dependent on the artificial water supply, and where experience of this kind is perhaps older than in any other part of the globe.

Egypt has in this respect an advantage over every other country, in the heavy charging of the flood waters of the Nile with rich, alluvial soil, which enriches the barren sand; but this is only a compensation of nature, for in other countries, as in our own, for instance, there is the good soil already provided, requiring only moisture to make it fruitful.

At present the cultivable area in Egypt consists of about 2,850,000 acres in the Delta and 2,250,000 in Upper Egypt, and from this comparatively small area the annual approximate value of the crops is from $125,000,000 to $150,000,000. Little has been done for many years to increase this area, but under the English administration of the country the irrigation department of public works has become a live institution, with capable engineers in charge, under the direction of Colonel Moncrieff, and the consequence is a far better control and utilization of the flood waters, and an annual addition to the irrigated and cultivated area of about 150,000 acres. The amount of money expended to attain these results is trifling compared with the benefits secured, the largest grant being about $5,000,000 to carry out some important work in connection with the *Barrage*, or great dam, designed to regulate the water supply for the Delta, but which had never been so far completed as to effect its object. Want of money is the only thing hindering various well-studied schemes of the irrigation department which, when carried out, will add enormously to the prosperity and revenues of the country. Among these schemes is the reopening of Joseph's Canal and the filling of the great basin of "Lake Moeris," in the Fayoom. It is simply wonderful that so much has been accomplished at so small a cost and within so short a time as four or five years. The economy exercised in the expenses of administration deserves especial notice and commendation. In 1887, for instance, when the expenditure exceeded the sum of $4,000,000, the entire cost of administration was only $212,000.

An important point is to be taken into consideration in applying the results of irrigation in Egypt to our own case, viz.: that, owing to the nearly dead level of the surrounding country, irrigation is a vastly more expensive thing there than with us, where all irrigation can be applied by simple gravitation. In the Egyptian Delta alone, which produces considerably less than half the crop of the country, there are 11,708 water wheels and 1,285 stationary and portable steam engines of 12,290 H. P. for raising the water to the necessary levels. In addition to which all sorts of devices, such as sluices, drains, syphons, etc., are necessary for getting rid of superabundant water in some parts in the flood season. The scale upon which such contrivances are used may be judged from the fact that there are centrifugal pumps in operation which have a capacity of 220 tons a minute.

THE BEARS' NEST, ALASKA, SWINDLE, AND WHO PROFITED BY IT.

In the ENGINEERING AND MINING JOURNAL of September 7th reference was made to the Alaska "Bears' Nest" swindle, and to the investigation then in progress with the view of demonstrating whether the core of the single diamond drill hole, upon which the property was accepted by the experts, was "salted" or not. Recent developments leave no doubt on this point, and it is now known absolutely that the rich float rock found scattered over the surface of the claim, and assayed by the childlike ex-

perts, was carried there by Indians, under the instructions of certain parties, and was carefully and skillfully planted for the experts to find.

The core which assayed so well, and which has since disappeared, no doubt came from the boring on the property. The quartz there is very thick and very closely resembles the Treadwell rock, with the important difference, however, that it contains only a trace of gold. This core was undoubtedly "salted," probably by repeated heating and immersion in a chloride of gold solution, an abundance of which was available at the Tredwell works. By a subsequent heating every trace of chlorine was easily driven off and the core presented a perfectly natural appearance, the gold in it being quite invisible to the naked eye. The different portions of the core itself differed greatly in richness, being nicely graded from the hanging to the foot wall, where it was richest. In other words, this disgraceful swindle was skillfully planned and executed, and was successful in obtaining $650,000 in cash and some $300,000 or $350,000 in bonds from the English purchasing company.

We are quite aware that there are those (we hope few in number) who apparently believe that success in swindling condones the offense, and who think it "smart" to "get away with" a "tenderfoot," and who think or say that "we might as well take in the foreigners"—a sentiment which is a gross slander on Americans, who, in their business transactions, are the most honest people on the globe. We trust we shall yet be able to show this by announcing that some, at least, of those who have profited by this Bears' Nest swindle, but who, we believe, were innocent of any complicity in it, have, like honorable men, refunded the share they have received of the ill-gotten "boodle."

WHO PROFITED BY THE BEARS' NEST SWINDLE?

The former owners of the property, and those who promoted its sale, and those who did or instigated the "salting" were the chief beneficiaries. Who were these men? Mr. JAMES TREADWELL, brother of Mr. JOHN TREADWELL, of the Treadwell mine, which adjoins the Bears' Nest, was one of the chief owners of the Bears' Nest property, and has received a considerable part of the million dollars above mentioned. He is a wealthy gentleman, lives in San Francisco, and bears the reputation of being an honest man, and we believe was ignorant of the nefarious plot. We trust he will give us an opportunity to show that he merits the good opinion that those who know him have expressed concerning him. Mr. F. O. DOWNING, of Portland, Oregon, also one of the original owners of the Bears' Nest, is a gentleman who enjoys an excellent reputation, and we believe will decline to participate in or profit by this fraud.

Mr. N. A. FULLER, who at the time was superintendent of the Treadwell Mine and Mill (The Alaska Mining and Milling Company), where it is believed the core was "salted," was also an owner of the Bears' Nest. Mr. FULLER has since then resigned his position, and we hear has left the territory. He is said to have "cleaned up" $100,000 to $150,000 out of the "steal." We would like to be able to place upon record that he declines to profit by the swindle.

Mr. P. MURRAY, formerly of Juneau, Alaska, now of San Francisco, went to London to sell the property; the titles were placed in his name, and he profited by the sale.

Dr. FULLER (no relation to the superintendent of the Treadwell), went to London with Mr. MURRAY to assist in selling the property and profited by the transaction.

Capt. JAMES CARROLL, of the Pacific Coast Steamship Company, who has been accused of opium smuggling, was, we are told, interested in the sale.

Mr. R. M. BRERETON, the well-known English expert, upon whose favorable report the property was purchased, is said to have received a fee of $10,000, which, being a gentleman of good reputation, he will no doubt refund, for had he exercised ordinary prudence in his examination the swindle could not have succeeded.

MR. T. C. GREGORY and MR. E. J. DOWLING, experts sent from England to examine the property, also made favorable reports without any proper examination or tests, and are, therefore, in a measure responsible for the success of the plot.

Experts the world over may learn something from this lesson, and we trust will gain a better appreciation of their immense responsibilities in making reports upon mining properties; if they do this there will be fewer disastrous failures to record in mining.

We have thus endeavored to do "justice" to the different parties interested in this disgraceful transaction, but we have great confidence in the honesty of several of the persons named, and believe they not only would not be connected with the organization or execution of a dishonorable scheme, but would not be willing to profit by it. We trust we shall hear from them in this matter, and in due time will have the pleasure of recording facts to justify this good opinion.

THE OUTLOOK FOR SILVER.

Without doubt efforts will be made at the next meeting of Congress to legislate on the "Silver Question." The St. Louis convention, to which we referred in our issue of 26th October, will probably ask for "the free and unlimited coinage of silver"—that is, it will ask that any one may be entitled to bring silver to the mint and receive therefor coined silver at the rate of $1.29 per ounce fine. The effect of this would be the prompt exchange of silver dollars for our gold, we would receive all the silver that could be thus exchanged, and it would be but a very short time before we would have one price for goods if paid for in gold and another if paid for in silver; in other words, this policy would quickly depreciate all our silver coinage to the basis of bullion.

There is, we think, not the least prospect of this "free coinage" scheme receiving any serious support in Congress or by the Administration.

A more important and better supported effort will be made to induce the government to buy at market price and to coin the entire silver product of our mines, or, say $4,000,000 a month, instead of $2,000,000 a month, as at present. The advantages of this to our silver producers would be in thus finding an outlet for so much more silver, and undoubtedly the price of the metal would advance, for the entire world's surplus over consumption is now almost nothing.

The silver market appears to have reached its bottom point, and the low price of the metal, which has limited production, has also stimulated consumption to such an extent that this has overtaken production, and seems now to be on the point of exceeding it, for there has been for some time past a noticeable stiffening tendency in the European markets. If, then, our government should increase its purchases by $24,000,000 a year, the scale would certainly be turned and the price of the metal would advance, probably quite rapidly. The other side of this agreeable picture is, of course, that if the government should increase its purchases, it would simply be taking the taxpayers' money to benefit a single industry, for the country does not need the silver, and does not use what it has, and such a policy once adopted might logically be extended at some other time in the interest of copper, or nickel, or lead, or iron, and the government be called on to make heavy investments of the taxpayers' money in order to relieve the producers of these articles in a period of over-production and low prices. It needs no statesman to see that this policy would be both unwise and unjust.

It is certainly desirable to increase the demand for silver, and, outside of the arbitrary purchasing of unnecessary amounts by our government and the piling up of the uncalled-for metal, either in the form of bars or coin, the most obvious way to effect this increase in demand is by promoting its use by other countries in the development of commerce.

Since the practical suspension of coinage by the Latin Union and the curtailment of its legal tender value in Germany have brought the metal to its minimum price under existing conditions of cost of production, and that there is now apparently no force operating or likely to operate for some time to come to lessen its consumption, we believe the tendency of the metal under the ordinary influence of supply and demand is upward, and that there is less call than ever for the application of quack nostrums to "tone up" the market.

There has been some anxiety lest the Latin Union nations should call for the settlement of their silver balances, as they were entitled to do, on one year's notice, by their convention of a few years ago; but France is said to have notified the other countries in the Union that she does not intend to give this notice for at least a year, so that there is no longer any immediate danger threatening from this direction. It is true that in France the official interest in bi-metallism has declined, and there is less hope for assistance there in helping this metal than there has been. But France is far too heavily interested in silver to be other than friendly to any movement having for its object the enhancement of its value.

It is impossible to ascertain the amount of silver in circulation in France, and passing current there as freely as gold and exchangeable into that metal at a fixed ratio, but it must be enormous, for in addition to the French coinage since the establishment of the mint in 1795, which at the end of 1888 amounted to about $1,060,000,000, there are over $100,000,000 in surplus silver coins from Belgium, Italy and other Latin Union countries. The metallic reserve of the Bank of France on October 17th, 1889, amounted to $509,070,745, of which nearly one-half, or $250,443,326, was in silver coin. The increased demand for silver for the English mint, and a somewhat mysterious demand for the continent (supposed to be from Germany), together with the usual Indian requirements at this time of year, make a strong showing, and the general outlook for the metal is much better than it has been for some years past. The most important feature in this improvement is undoubtedly that it is based on the sound natural foundation of supply and demand.

The Pan-American Congress may afford an opportunity for making some arrangement by which our coin will circulate in South American countries, and it is barely possible that some agreement may be entered into with the Latin Union nations to join in strengthening silver. It must be borne in mind, however, that any agreement with nations that have only the silver standard is more likely to benefit them than us, and will open this country as a market for the products of their "free silver coinage."

The extension of our foreign commerce and the development of the trade and industries of China, of Africa, and of the South American countries, by the opening of railroads, etc., is likely to prove a very im-

portant element in the silver market in the not distant future, both because these developments will augment production and because they will increase the use of the metal. The immediate effect on the price of silver will not, however, be great, and it is the natural condition that consumption has overtaken production that is now the encouraging feature in the market, and that we believe justifies our expectation of considerably higher prices for the metal in the near future.

NEW PUBLICATIONS.

ANNUAL REPORT OF THE GEOLOGICAL SURVEY OF PENNSYLVANIA FOR 1887 J. P. LESLEY, State Geologist. Published by the Board of Commissioners for the Geological Survey, Harrisburg, 1889. Cloth, 8vo, 115 pp with plates. Also. South Mountain Atlas Sheets, C 1, 2, 3 and 4, and D 1, 2, 3, 4, 5 and 6

This volume has been issued to prevent a break in the series of annual reports. It contains four short monographs: Cave Fossils, by Dr. Joseph Leidy; Fossil Tracks in the Trias, by A. Wanner; the New Boston Basin, by B. S. Lyman, and State Line Serpentine, by Prof. F. D. Chester. The paper on cave fossils also describes some bone implements found in Hartman's cave, which are of archæological interest, as their association with the bone fossils shows the relationship to the animal life preceding and coincident with human occupation. The fossil tracks described by Mr. Wanner were discovered in a quarry in "New Bed Sandstone," in the Triassic of York County, Pa., and were made by an unidentified three-toed animal. From the same quarry impressions of shells and algæ were obtained. Mr. Lyman's paper gives sections of coal measures XI., XII. and XIII. of the Pennsylvania series in the New Boston region, with the coal beds of these measures. Professor Chester contributes a lithological and mineralogical description of the surpentines of Chester County. The State Geologist announces the completion of the anthracite survey and the disbandment, May 31st, 1889, of the force assigned to that special work. The results of the investigation of the bituminous coal region, in the oil and gas fields, during 1887 and 1888, are to be shortly published. The atlas sheets sent out with the 1887 report are rather sketchy, but will be of much use locally.

MONOPOLIES AND THE PEOPLE. BY CHARLES WHITING BAKER, C. E. Published by G. P. Putnam's Sons (Knickerbocker Press), New York and London, 1889. Cloth, 8vo., xv. + 263 pp. Price, $1 25.

Mr. Baker has undertaken a large contract in attempting a systematic investigation of this great and complex problem of the day, and in proposing solutions for it. Every one who reads his essay thoughtfully—and it is a book which should be read by all economists and all who have an interest in following the current debate—will be struck by the able way in which the subject is handled. The author approaches his task with the evident purpose of maintaining a fair and judicial attitude, and in the main his presentation of the case is impartial. The English is very clear, terse and sharp, and the whole style of treatment is closely analytical and methodical, so that the argument stands out plainly. This latter feature is one which all treatises on political economy should possess, since the inherent complexities of the subject-matter are enough to puzzle the brains of the reader without being aggravated by a cloudy or indecisive style. When Mr. Baker presents his conclusions, that is, his practical plans for relief, he faces the issue frankly, and allows no possibility of misunderstanding as to what he means. He offers specific plans for application in several industries, notably in railways and mines; but it is questionable whether many thinkers will be found to agree with him throughout. While all unite in deploring existing evils, when it comes to practical remedies hardly two economists will coincide in opinion when discussing a series of details.

The subject is too wide and too involved to be properly attacked in a single article. It is even impossible to state Mr. Baker's general line of argument fairly if one attempts to condense it into a few words. To understand his position, the book itself should be studied. The ENGINEERING AND MINING JOURNAL has often taken decided ground when discussing the metal trusts and other combinations which come within its legitimate field of inquiry, so that the position of the JOURNAL is already well known, and it is needless now to enter upon repetitions.

But we may note a few of the salient ideas advanced by Mr. Baker, without prejudicing his case. Roughly stated, the situation is thus described: The tendency of the times is toward consolidation of capital and toward systems of production or service concentrated in a comparatively few corporations. This is the first step. The result is a more intense competition. This in turn forces the few competitors to abandon the expensive struggle, and to unite in a pool or a trust. Mr. Baker advances this paradox of competition leading to monopoly, and supports his theory most ingeniously. He especially emphasizes his idea that competition, which many or most persons think is the safest check on monopoly and the best thing for the public welfare, should be restrained. Finally, monopolies, having been brought into existence by a necessary process of evolution, what is to be done to do away with or mitigate their evils? There are three prominent courses open: (1) the policy of *laissez faire*, trusting that the evils will work their own cure, that combinations will be but temporary, and that competition will in the end rule; (2) that the State should itself be or supplant the monopoly, as, for example, in the postal service; (3) that the State should regulate the monopoly, as the Inter-State Commerce Commission is endeavoring to do with the railway pools. Mr. Baker goes rather further in advocating government interference than we are prepared to follow him; but it is only just to say that he puts his case with a full realization of the difficulties and objections which must be considered when it is proposed that the government shall "go into business." The spirit of the nation is decidedly against the policy of extending the functions of government beyond comparatively narrow limits, within which it exercises the right of eminent domain and of control for the public safety. Just where these limits are to be fixed is an open question. Even for government to own the telegraph system and control railway operations is perhaps more than conservative economists in this country think proper, and they would at any rate draw the line at about this point.

As an illustration of how far Mr. Baker is willing to go in increasing the power of government, we quote in full his scheme for suppressing monopolies of mineral products. As in other instances, it is necessary to follow the whole of his preparatory statement and argument in order to justly criticise the resulting conclusions; but having done so, we imagine that most thoughtful readers will consider the proposed plan impracticable under existing conditions. But this is an extreme case, in which it may be supposed that the author has believed himself to be forced to his deduction by a strict logical application of the principles which he formulates. Most of his other suggestions are by no means so radical.

It seems too plain to need proof that our mines and quarries are certain to have a steady increase in value as we use up the easily worked surface deposits and have to dig deeper shafts and develop the poorer deposits to supply the demand. In the case of any metals or minerals of which the deposits are so abundant, easily worked, and widely scattered that the number of evenly matched competitors is great enough to insure steady competition, the public will get the benefit of the especial gift of Nature and its owner can receive little more than an ordinary return for his labor and capital. But, as we have already amply shown, in the production of a great number of minerals and metals competition has been killed or is heavily handicapped by the vast advantages of a few bonanza mines, and the public is being taxed millions of dollars for that which belongs to it by right.

How long is this condition to continue? Must all succeeding generations pay for coal, copper, zinc, lead, nickel, marble, oil, gas, and various other products of our mother earth just what those who control the chief deposits choose to ask? Because a pioneer stumbles upon a valuable mine, shall the sole right to use the product of that mine be secured "to him, his heirs and assigns" for ever.

Suppose, now, that each of these several States were to acquire the title to all the productive mines, quarries and mineral wealth within its borders, and enact laws providing that future discoveries of minerals on land where they are not now known to exist should be liberally rewarded, if the discovery proved valuable, but the minerals should belong to the State, and not to the owner of the land. The same principle which we found to apply in the case of the railways would serve here in readjusting values, viz.: the difference in the rates of interest on safe investments and on risky ones. When acquired, the mines should be leased to private parties for operation. In the case of coal mines, and perhaps of iron, it would be well to copy largely from the scheme proposed for railway operation, viz.: place all business in the hands of a single company, which should thus be enabled to carry on business on the largest possible scale; do away with wasteful competition, and aim to regulate prices to provide a certain reasonable, steady income on its capital to the mining company.

For mines of copper, zinc, lead and similar metals, it would be best to pursue a different plan, and simply provide by statute that such mines be leased for a short term of years to the bidder who would offer to sell his product at the lowest price per ton at the mines, all lettings and relettings to be publicly advertised, and the successful bidder to give bonds for the faithful performance of his contract. It is difficult to see how, under these conditions, a combination to defeat competition could be formed. Relettings of expired leases would be frequent; and, bidding by the selling price, a single competitor would be sufficient to break any combination. Of course the lease should specify a minimum product which the mine should furnish.

It would be advisable, too, that a manifest duty of the government, which should be undertaken even under present conditions, should be observed. It should be required to work the mine with due attention to saving the greatest possible amount of ore or mineral contained in the seam or vein.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents

The Silver Question.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Permit me to congratulate you on your article touching the silver question, published in your issue of to-day.

Every sentence of it treats the subject well and shows common sense, and should be indorsed by our business men.

COLORADO SILVER PRODUCER.

NEW YORK, Oct. 26, 1889.

Definition of "Unit" of Metal.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I notice in the ENGINEERING AND MINING JOURNAL of the 19th inst. that Annaconda matte sold in Liverpool for "eight shillings and three pence per unit." Now, will you kindly inform me and many others on the lakes, through your excellent journal, what amount of copper is meant by "unit." I have asked quite a number the meaning of the phrase a "unit of copper," but thus far have not been able to get a satisfactory explanation. ENQUIRER.

RED JACKET, Mich., Oct. 28.

A unit of metal, whether of copper or other description, is the same as one per cent., *i. e.*, a copper matte carrying 50 per cent. metallic copper contains 50 units of copper, and, if sold at 8s. 3d. per unit, would realize £20 12s. 6d. per ton of 2,000 pounds, or about $103. When a metal is quoted at so much per unit, the price per ton can be estimated by multiplying the price per unit by the percentage of metal in the ore.—ED. E. AND M. J.]

One Scheme too Many in the Croton Valley.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: The City of New York should be concerned for more reason than one about the future of the Croton Valley. At present there are two schemes on foot for the exclusive occupation of the region comprising this drainage area; they both cannot succeed, and it is none too early now for the people to decide between them.

The length and breadth of the valley is quite as advantageously situated as any section of New York's surrounding country for suburban development, therefore, it is to her interest that the growth of it should not be retarded, and the efforts of her people to secure this end constitutes a perfectly fair and live scheme, though it lacks organization.

On the other hand the valley is being usurped as a gathering ground for water, which constitutes a conflicting scheme.

In the first case we recognize the rational impulse of an expanding community, and in the second a policy of short-sighted and eager partisans. This effort to occupy a region with two antagonistic projects—one having for its object to invite population, and the other having for its certain result the driving away of settlers—is thoroughly hostile to the welfare of the city and the State. Both schemes cannot survive since the one requires that no artificial lakes be created, while the other requires that large areas be alternately flooded and drawn off.

The contest for the possession of the valley has already gone far enough for all fair-minded citizens to conclude that the water scheme must not

prevail, for the devotion of any considerable portion of the Croton Valley to a purpose which necessitates its depopulation can only be sanctioned by the belief that New York City has ceased to grow. Now, are there any evidences of injury thus far done which will support common sense in this matter? In the rank of States, according to their density of population, New Jersey stands fourth, Connecticut fifth and New York sixth. It need not be demonstrated that for a radial distance of 70 miles or more, this section of country receives its impetus from New York City as an overflowing center. Hence it should excite some curiosity that the counties Westchester, Putnam and Dutchess (comprising the Croton watershed) show in the census of 1880 a rate of increase lower than those of half the counties of the State at large and far below that of any equivalent area within a corresponding distance from the city.

In order to make comparisons with regions similarly situated we will take the distances from Central Park to the south and north limits of the Croton basin and draw two circles—through Connecticut and Long Island on the east and through New Jersey on the west. The first thing to be noticed in this belt of country is that 65 per cent. of its land area is in the States of New Jersey and Connecticut, so that if we conceive immigration to distribute itself uniformly the State of New York will only get 35 per cent. of it. The area of New York's section of the belt is 616 square miles, and the Croton basin constitutes 58 per cent. of it, consequently the portion of the assumed belt which is under the jurisdiction of the State and not subservient to any ambitious scheme is less than 16 per cent. of the whole land surface under discussion.

In the 30 years, 1850–80, the townships comprising the basin increased 23.2 per cent., while the increase for those towns of the New York belt outside of the basin was 35.60.

The Croton townships had a population in 1880 of 27,406. If they had been as thickly settled as the townships adjacent on the west the population would have been 64,428; and, similarly, for the east, 74,340.

Does it not signify that something is wrong with a valley when it is flanked on both sides by a density of population between two and three times as great as its own?

Taken by themselves, the townships of the basin in Westchester County show a *decrease* in the decade, 1870–80, of 1 per cent., while the corresponding section in New Jersey shows an *increase* of 15·54 per cent.

Some persons may dispute still the efficacy of water works in preventing the growth of a country, but these figures ought to assist them in their feebleness to a knowledge of the fact that they cannot accumulate water and people in the same valley.

CROTON.

Longwall *vs.* Chamber and Pillar for Anthracite Veins.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I have been somewhat surprised that my recent article in your journal (issue of Aug. 17th, 1889) has brought up no criticism or no desire for further details of my ideas therein expressed. What I should like to have seen, would have been some one come forward and cut them up; or at any rate offer objections in the way of the plan proposed. Am I to take it that "silence means consent" to my system being the proper one where practicable, or that coal operators are quite satisfied with present systems of mining, in other words to leave say one-third of their coal in the ground, leaving it for the "next generation" to take care of itself, or can it be that in the rush there is to make money now no time can be given to consideration of new ways of getting the coal—of economizing?

Since the article was printed the writer of it has had numerous objections made to him in person, some more or less weighty, others of no value, and some again even absurd and displaying ignorance and prejudice in those making them. But probably these objections will be best answered if you will kindly insert the following figures: They have been gone into with care both by myself and a leading mine superintendent of this city, so that they will not be found to be very wide of the mark. It is true I have figured on a larger percentage of yield (namely, 70 per cent.) than is in actual practice obtained in the cleanest-worked region—Wyoming-Lackawanna coal-field—which will really show still more in favor of longwall over what is being done to-day.

MINING ANTHRACITE BY LONGWALL WITHDRAWING.

Estimate of Cost of Mining a 6-foot Vein in the Wyoming-Lackawanna Coal Field, Where, Say, 70 Per Cent. of the Coal is Extracted by the Chamber and Pillar System. At Per Acre:

Opening up and mining a section by chambers and pillars:	
Driving gangways and headings, at $2.50 per yard	$213
Opening chambers	33
Crosscuts between chambers	30
Building stoppings in cross-cuts	15
Tracks in chambers—wooden	40
Mining, including loading into cars at face of workings, allowing about 9 per cent. for waste in the vein; 6,737 tons at, say, 67 cents per ton	4,514
Royalty on 6,737 tons, at, say, 30 cents	2,021
	$6,866
Developing and mining out same section by longwall:	
Driving headings to line or into basin, in solid coal-seam, at $3	$258
No chambers to open	....
No cross-cuts between chambers	....
No stoppings " "	....
Tracks in the working faces—steel	17
Mining, includes loading cars, etc., and allowing, say, 9 per cent. for dirt, etc., in vein; say, 9,625 tons (all the vein being mined), at, say, 54·5 cents per ton	5,245
Royalty on 9,625 tons, at 30 cents	2,887
	$8,407

NOTE.—This is as far as I can figure for want of data:
Now, $6,866 ÷ 6,737 tons = $1.02 per ton, and $8,407 ÷ 9,625 tons = 87 cents per ton.
Showing a *saving* of about 15 cents per ton on mining the coal at the face. If worked by longwall. Then we have 9,625 tons × 15 cents per ton = $1.443 saved on the item of *mining* alone, and 2,888 tons × 50 cents per ton (profit on mining) = $1,444 profit on the *extra coal mined* per acre; total, $1,887 per acre.

Now, the price put down for mining and laborer's wages on the longwall side of this estimate, namely, the 54.5 cents per ton, has been got at by supposing that the quantity of powder now used to mine say eight tons of coal would, with a longwall face, get say 10.5 tons, a day's work for two men. It will be apparent to everybody that if only 60 per cent. of a vein is being mined instead of 70 per cent., as per above estimate, the gain to the operator will be all the greater, and especially so where there is no royalty to pay.

To the figures given we must, of course, add, on both sides, the cost of the remaining items—mules, drivers, ventilation, timber, drainage, mine-cars, repairs, officers, etc.; but these, or, at all events, the majority of them would be *less* for longwall than for present method, because longwall provides for:

a. Better condition of coal mined (more lump and less culm).
b. Best possible ventilation, because the air-current *sweeps* the working face at all positions, and there are no *cul de sacs*.
c. Only about one-eighth the area of open mine workings, or exposed roof to contend with.
d. Freedom from "squeezes" or "caves" in the workings, because roof falls in the goaf or in the abandoned workings.
e. Best method for maintaining free access between working faces and the shaft or other openings.
f. Least liable to be affected by caves or crushes occurring in adjacent mines.
g. If working to the rise (up the pitch), water met with will drain back into goaf.
h. Requires only about one-tenth the length of tracks or haulage ways now used.
i. Since shorter roads, fewer mules, fewer drivers, fewer mine cars.
j. Fewer air doors, few, if any, stoppings.
k. The goaf affords best possible place for stowing away rock, slate, culm, etc.
l. Less liability to mine fires, explosions of gas, and other catastrophes.
m. Better facilities for loading and manipulating mine cars at the working face.
n. Better facilities for dressing coal off slate, rock, boring, etc.
o. Proves your coal far in advance of working faces, or better suited for keeping the shipments up.
p. Probably the best system suited to putting in electrical or other appliances for mining or hauling.
q. Well adapted to resumption of old or present plan should longwall fail.
r. Less surveying, less book-keeping, better supervision.
s. No goaf or other abandoned or worked-out places to be traveled or kept in repair.
u. No cross-cuts or air holes as now used for ventilating the working places.

Any extra labor to be performed in the working places under present system, such as standing timbers, taking down and gobbing top, would be much the same for longwall. The pecuniary gain, if mining by longwall, would, however, allow of additional attention to the roof were any needed.

It goes without saying that while preparations are going on for longwall, coal to keep the breaker running would have to be found in some other section of the mine. I am speaking of where mining is now being done or in existing workings.

As the length of main or branch haulage roads for longwall would be about equal to what is now the usual practice, nothing has been put down in my estimate for tracks, brattices, repairs, etc., such charges being common to both systems.

If the figures and remarks here given do not show that there is *money in the thing*, I have nothing more to say. I am, sir, respectfully,

SCRANTON, Pa. W. S. GRESLEY, M.E.

ELECTRIC MINING HOIST.

We illustrate in this issue the Sprague improved electric mining hoist, which has recently been built by the Sprague Electric Railway & Motor Company, of New York, for electric mining work. This company has always been identified with progress in the electric power field, and their street railway apparatus has a world-wide reputation and has been adopted extensively at home and abroad.

We understand that this company has perfected, after months of designing and experiment, a number of electric mining applications. The electric mining hoist is built at the Edison Machine Works, at Schenectady, N. Y., from designs by engineers of wide experience in mining and electrical work.

The speed of the motor is controlled by an electric switch at one side, by means of which the motor can be made to vary its speed by a single movement of the switch handle. Turning the handle to one notch will make the motor run slowly, through two notches, faster, and full number of notches, at full speed; while turning the handle in the opposite direction will give similar rates of speed with opposite direction of rotation.

The movements are very simple, so that no expert labor is required. A miner will soon become used to the hoist and can handle the switch and operate the motor in the same way that horse-car drivers quickly learn how to take care of an electric car.

The qualities of durability, compactness, ease of operation and minimum of wear, so essential in mining work, have been carefully attended to in this machine. The view presented shows that no extra room is taken up by the machine. Everything is arranged to fit closely upon the base frame of the hoist.

The gears are all boxed in iron cases to protect them from dust or stray stones. At the same time these cases can be quickly removed if occasion should require to reach the working parts. Every part of the machine is designed to give the greatest power with the least weight, and by this means the machine is made quite light and can be easily transported from one part of the mine to another.

The efficiency of the electric motor when working at full load is over 90 per cent.; that is, more than nine-tenths of the energy which is delivered in the form of electric current at the terminals of the motor are transformed to effective work at the armature pinion.

We learn that this is only the first of a number of electric mining applications which are being prepared by the Sprague Company, and that others, which will be illustrated in these columns as they appear, will follow.

HOW PIG-IRON FORMS IN THE BLAST FURNACE.—III.

Written for the Engineering and Mining Journal by A. D. Elbers.

(*Concluded from page 244.*)

Accepting the correlative reaction $4CO + 4Fe = Fe_4C + CO_2 + 2CO$ as the actual mode of carburization, for iron that is forming from the reduction of ferric and magnetic oxides, it remains to be seen whether the carburization of iron forming, by the reduction of ferrous silicates, this reduction itself or the respective deoxidations of ferrous oxide and silica, and the known effects of silicon, on the carbon of the pig-iron, can be accounted for in a corresponding manner.

It must be premised here as a characteristic of practical metallurgical operations that all masses which are being changed chemically by intense heating are, while in that condition, more or less subjected to the influence of atmospheric oxygen. Air is held in suspension by, and fills the interstices of broken up and pulverized minerals, and passes through the walls of ovens and melting furnaces, as well as the most carefully luted clay pots. Hence, in heating carbon-fuel and mineral that are mixed for the purpose of deoxidizing said mineral, primary reactions are apt to take place between carbon and atmospheric oxygen that have been habitually overlooked in assuming that ore-oxygen and carbon react on each other in a direct way.

The deoxidation of silica—in the presence of iron oxide and carbon—has to be explained as follows: The carbon unites with oxygen to dioxide, and the latter, with more carbon, to monoxide, which reacts on a part of the iron oxide, while another part melts together with the silica. The ferrous silicates thus form and saturate until all the free silica is absorbed, and if a basic mass results its tendency will be to form normal or (with increasing temperature) even acid compounds, by parting with a portion of FeO when the latter has an opportunity to react chemically, as by entering the reaction: $FeO + CO = CO_2 + Fe$. If the metallic iron thus forming becomes carburized by an excess of CO, a split of the latter does not seem called for, because the CO must react more completely on an already liquid mass than it does in its contact with solid ore. Hence the excess may then be supposed to change completely into carbon and dioxide. The liquid-melted mass, on the other hand, is not so easily permeated by the gas, and, consequently, less liable to be carburized profusely.

The ferrous silicates that are more silicious than the dibasic silicate of protoxide of iron or ferrous monosilicate, part, in their turn, readily with this excess of silica when the oxygen of the latter finds a sufficiently strong attraction to force a separation, as in the case of the reaction, $SiO_2 + 2CO = 2CO_2 + Si$; and if there is no excess, then the ferrous monosilicate may be supposed to undergo the double reaction,

$2FeOSiO_2 + 4CO = 4CO_2 + 2Fe$ (80 per cent.) $+ Si$ (20 per cent.).

But in the blast furnace this latter change can only take place to a limited extent, because the lime takes hold of the ferrous silicates, the CaO setting free FeO when the latter has a chance to become reduced to metallic iron, and because the silicates of lime, as well as those of kindred bases, are indifferent towards carbon or carbonous oxide.

The percentage of silicon in pig iron is therefore apt to be comparatively small even under the most favorable conditions for its formation. Assuming that silicon alloys most readily in the proportion of $Si + 2Fe$, its influence on the already carburized metal may be inferred from the equation: $2Si + 2Fe_4C = Fe_4Si_2 + Fe_4C + C$.

The following formulæ may serve to illustrate the progressive changes of ferrous silicates, above referred to:

$6FeO3SiO_2$ $(SiR_2O_4) + 6CO = 5CO_2 + 2FeO3SiO_2 + Fe_4C$.

$6FeO3SiO_2$ $(SiR_2O_4) + 4CO = 4CO_2 + 2FeO3SiO_2 + 4Fe$.

$4FeO\ 6SiO_2$ $(Si_3R_2O_6) + 4CO = 4CO_2 + 4FeO\ 4SiO_2 + 2Si$.

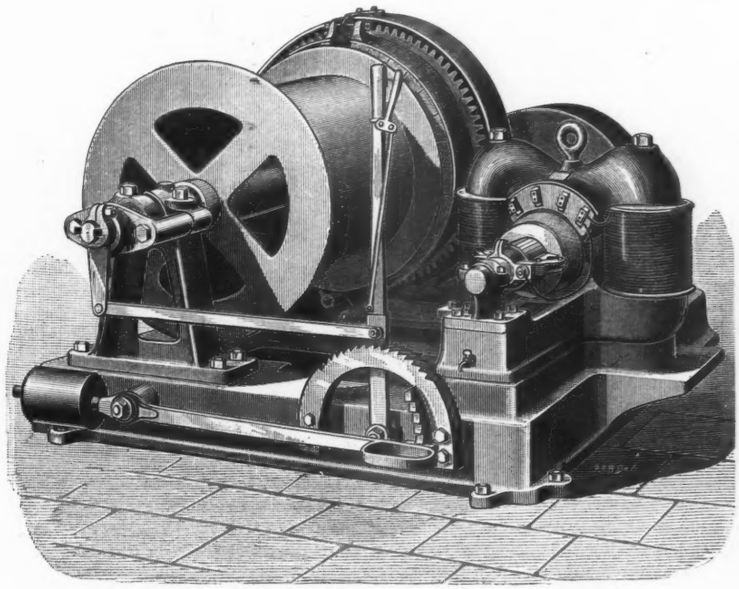
$4FeO\ 4SiO_2$ $(SiRO_3) + 4CO = 4CO_2 + 4\ FeO\ 2SiO_2 + 2Si$.

$4FeO\ 2SiO_2$ $(SiR_2O_4) + 4CO + 4CaO = 4CO_2 + 4CaO\ 2SiO_2 + 4Fe$.

Finally, it remains to be shown how the assumption that CO is the deoxidizer as well as the carburizer, will harmonize with the theoretical carbon requirements that are deduced from the customary equations: $Fe_3O_4 + 2C = 3Fe + 2CO_2$, $2Fe_2O_3 + 3C = 4Fe + 3CO_2$, viz., 14·3 per cent. of carbon for iron from magnetic oxide, and 16 per cent. for iron from ferric oxide.

As theoretical requirements have to be based partly on theoretical conditions, the ideal working of a furnace—after it is once in full blast—may be supposed to proceed as follows: The carbon, of the fuel that sinks down to the tuyeres, or comes within reach of the blast of air that is passed through them, changes to dioxide by uniting with the oxygen of that air. This dioxide (No. 1) changes to monoxide by passing through the superincumbent layers of fuel, and the monoxide thus formed (No. 1) combines, in ascending, with the oxygen of unreduced layers of ore to dioxide No. 2. The latter, reinforced by that which is set free from the limestone, admitting, of course, that a great part of it escapes from the furnace-mouth unchanged (dioxide No. 3) changes to monoxide No. 2 by penetrating still higher layers of coal, and the monoxide No. 2 changes to dioxide No. 4 by combining with the oxygen of still higher layers of unreduced ore.

The respective reactions may be grouped into two distinct classes. The first one comprises the reaction $C + 2O = CO_2$, by which the nitrogen of the air that enters through the tuyeres becomes heated so intensely that it conveys, in ascending, sufficient heat to the descending burden to prepare the latter for chemical action, and, the change of the primary dioxide into monoxide ($CO_2 + C = 2CO$). The second one comprises the change of monoxide No. 1 into dioxide No. 2 ($CO + O$ from the ore), which change sets free sufficient heat to liberate dioxide No. 3 (from the limestone), and to change it, along with the dioxide No. 2, to monoxide No. 2. The latter then changes, as already stated, to dioxide No. 4, which is a repetition of the production of dioxide No. 2. The number or frequency of these repetitions depends on the amount of heat that the nitrogen carries with it, for the reproduction of the respective carbon-gases ceases when the ascending mixture of dioxide and nitrogen becomes too cool to allow the dioxide to take up carbon, and when the ascending mixture of monoxide and nitrogen becomes too cool to allow the monoxide to combine or saturate with oxygen from the ore.



SPRAGUE'S ELECTRIC MINING HOIST.

This mode of explanation admits of assuming that the heat required for the change of dioxide into monoxide is derived to a great extent from the same source which contributes to the preheating of the ore and to the melting of the slag, from the superheated nitrogen, and thus brings into prominence the fact that CO acts as a *heat producer*. This is apt to convey a clearer idea of the order in which the reactions must take place than can be gained from the customary computations of the loss of heat which its formation involves.

The following equations are intended to show how these carbon requirements can be construed in accordance with the views hereinbefore expressed.

I. Reduction-formula.

$$(Fe_3O_4 + 4CO) + x(2Fe_3O_4 + 4C)$$

Example:

$$16CO = 16C + Fe_{12}O_{16} = 12Fe + 16CO_2$$
$$16CO_2 + 16C = 32CO + Fe_{24}O_{32} = 24Fe + 32CO_2$$
$$32CO_2 + 32C = 64CO + Fe_{48}O_{64} = 48Fe + 64CO_2 \text{ etc., etc.}$$
$$\overline{64C} \qquad \overline{28Fe_3O_4} \quad \overline{84Fe}$$

or: $4(Fe_3O_4 + 4CO) + 12(2Fe_3O_4 + 4C) = 84Fe + 64CO_2$

Hence the theoretical requirement must always be somewhat greater than that which is expressed by the equation $Fe_3O_4 + 2C = 3Fe + 2CO_2$, for according to the latter, 56C would be required for the reduction of $28Fe_3O_4$ to 84Fe.

II. Carburization-formula.

$$3(Fe_4 + 4CO) + x(Fe_4 + C)$$

Example:

$$12CO\ (= 6CO + 3CO_2 + 3C) + 12Fe = 3Fe_4C + (3CO_2 + 6CO)$$
$$+ 3C = 12CO$$
$$+ 12Fe = 3Fe_4C + (3CO_2 + 6CO)$$
$$+ 3C = 12CO$$
$$+ 12Fe = 3Fe_4C + 3CO_2 + 6CO$$
$$18C \qquad 36Fe$$

or: $3(Fe_4 + 4CO) + 6(Fe_4 + C) = 9Fe_4C + 3CO_2 + 6CO$

The theoretical requirement for carburization by CO, based on the assumption that a split takes place as above expressed, is therefore much larger than that which can be construed by assuming that solid carbon alloys or unites directly with the nascent iron.

III.—Reduction and Carburization Combined. 12CO in excess of reduction = 3C + 3CO₂ + 6CO.

Example:

No. 1. $28CO + Fe_{12}O_{16} = 12Fe + 3C + 19CO_2 + 6CO$
$+ 19C \qquad 19C = 44CO$

No. 2. $44CO + Fe_{24}O_{32} = 24Fe + 3C + 35CO_2 + 6CO$
$+ 35C \qquad 35C = 76CO$

No. 3. $76CO + Fe_{48}O_{64} = 48Fe + 3C + 67CO_2 + 6CO$
$54C \qquad Fe_{84}O_{112} \qquad 84Fe \qquad 9C$

or: $= 28Fe_3O_4 + 28CO + 54C = 48Fe + 9Fe_4C + 67CO_2 + 6CO$

Hence, if a more highly carbonized result is to be construed it has to be done by limiting the equation to the reaction of monoxide No. 1 (see above), to one reproduction only (No. 2), or to a combination of the results of separate equations, and if a result showing less carbonization is to be construed then the reproduction of monoxide No. 3 can be followed out by additional equations, so as to have monoxide No. 4, 5, 6, etc.

On the other hand, if it is more probable that carbonization is produced by the complete separation of the whole excess of monoxide into C and CO_2, then 6CO will do the work assigned to 12CO in the carburization formula, and 22CO will do the work assigned to 28CO in example No. 1. Whether one or the other view is correct seems to be merely a question of the probable strength of the chemical attractions that come into play, for the computations of the total carbon requirements, or, more especially, of the allowances for loss of heat by radiation and for the fusion of the slag, are usually sufficiently vague to allow of either interpretation.

As it is presumable that the molecular quantity of the CO that splits up cannot exceed the sum of the combined atoms of the elements by which it is attracted (28CO to 12Fe + 16O) the reaction:

$$Fe_{12}O_{16} + 32CO = 20CO_2 + 8CO + 3Fe_4C + C,$$

which was referred to in the opening article as unlikely to occur for other reasons, is also inadmissible on the ground just stated.

HOBOKEN, N. J., October 2d, 1889.

AMERICAN RAILROAD BRIDGES.

By Theodore Cooper, M. Am. Soc. C. E.*

(*Continued from page* 362.)

LONG-SPAN BRIDGES.

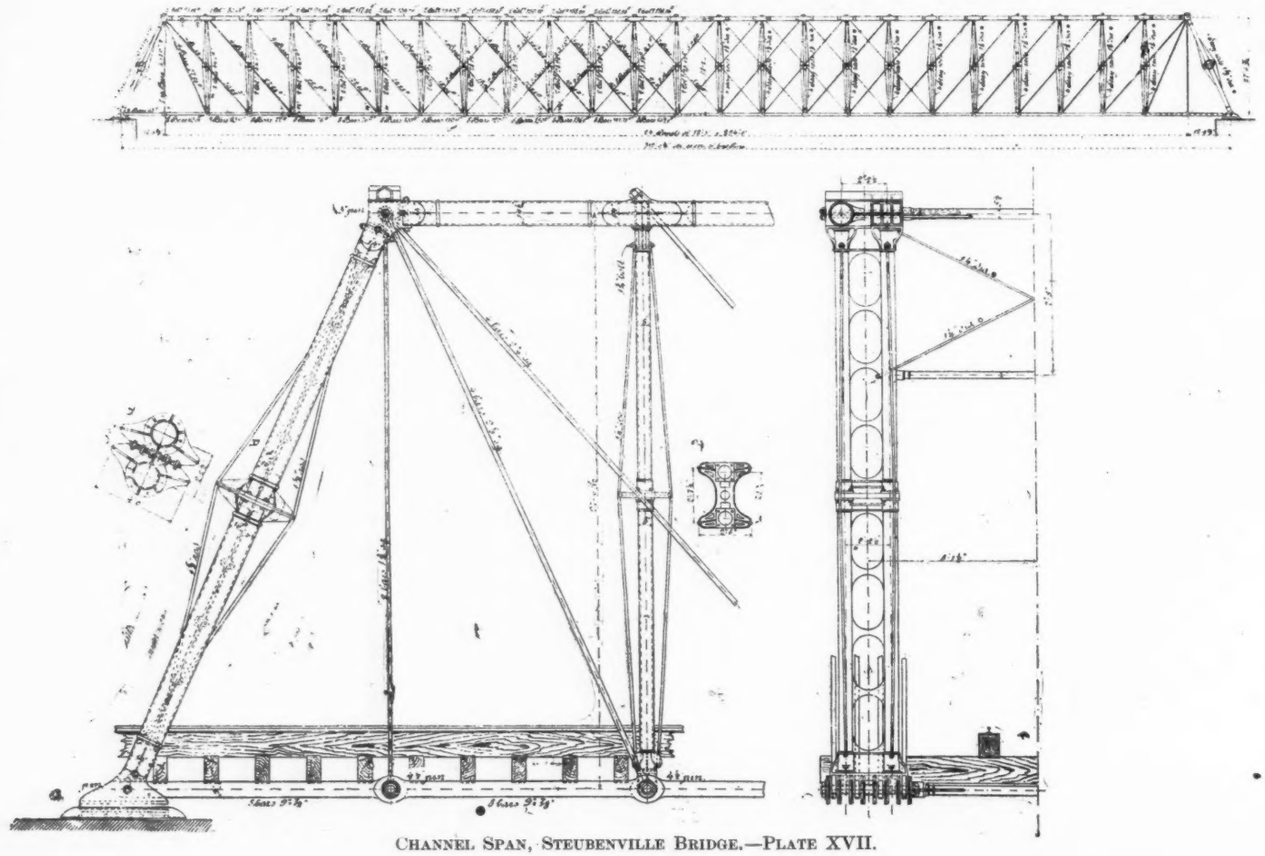
The era of long-span truss bridges in America may be considered as dating from the building of the first bridge over the Ohio River at Steubenville, between 1863–64, by Mr. J. H. Linville. The channel span was 320 feet long and 28 feet deep. The top chord and posts were made of cast iron. It was proportioned for a rolling load of 3,000 pounds per foot of track, a notable increase in the load heretofore in use. (See Plate XVII.) This bridge is now being removed.

This was followed by the bridge over the Ohio River at Louisville, built by Mr. Albert Fink in 1868–70, with two main spans of 360 and 390 feet. (See Plate XVIII.)

In 1870 Mr. Linville built the bridges over the same river at Parkersburg and Bellaire, with channel spans of 340 feet.

And in 1872 he built the Newport & Cincinnati Bridge, with a channel span of 420 feet.

During 1868–74 James B. Eads built the bridge at St. Louis over the Mississippi River, consisting of two arches of 502 and one of 520 feet clear span.



CHANNEL SPAN, STEUBENVILLE BRIDGE.—PLATE XVII.

In 1876 the Cincinnati Southern Railroad bridge over the Ohio River was built by the Keystone Bridge Company under specifications prepared by Mr. G. Bouscaren, the design being made by Mr. J. H. Linville. The channel span was 519 feet, the longest truss span ever built up to that time.

The channel spans of the Henderson Bridge, 522 feet, and of the Ohio River Bridge, Kentucky Central Railway, at Cincinnati, 550 feet, are the only independent truss bridges up to the present time with greater spans.

There are now in existence on American railroads over five miles of bridges with spans from 300 to 400 feet, nearly four miles with spans from 400 to 500 feet, and two and a half miles of bridges with spans exceeding 500 feet, estimated as single-track bridges, all exclusive of wire suspension bridges.

The first iron cantilever bridge of importance was the Kentucky River Bridge, designed and built by C. Shaler Smith in 1876–77. It is 1,125 feet long, and consists of three equal spans 375 feet. The second, also by the same engineer, was the Minnehaha Bridge over the Mississippi, near St. Paul. It was built during the winter of 1879–80, and consists of one center span 324 feet, and two shore spans 270 feet.

The third and fourth were the Niagara and Frazer River bridges, designed by Mr. C. C. Schneider, the first being completed in 1883 and the second in 1885.

The St. John River cantilever was built in 1885. Since that time many have been built, the one of greatest magnitude being the Poughkeepsie Bridge, built by the Union Bridge Company and already described in our *Transactions* (Vol. XVIII., June, 1888).

3. COMBINATION BRIDGES.

This kind of bridge is one in which all the tension members of the web

* *Transactions* of the American Society of Civil Engineers.

400 FEET SPAN OF THE OHIO RIVER BRIDGE
AT LOUISVILLE, KY.

FIG 1. HALF SIDE VIEW

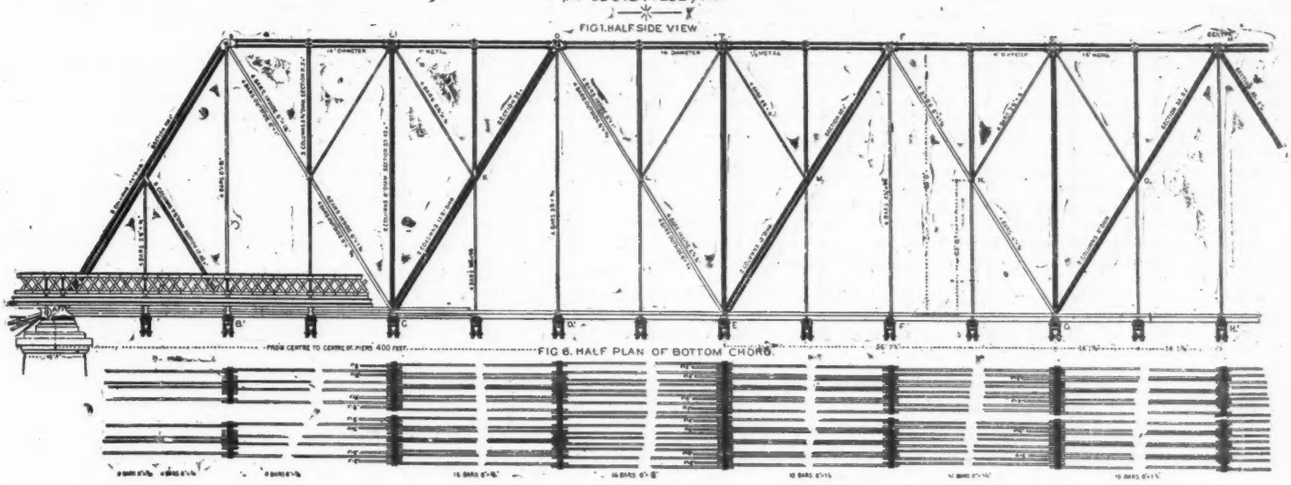


FIG 6. HALF PLAN OF BOTTOM CHORD.

FIG 2. PARTIAL PLAN OF BOTTOM FRAME

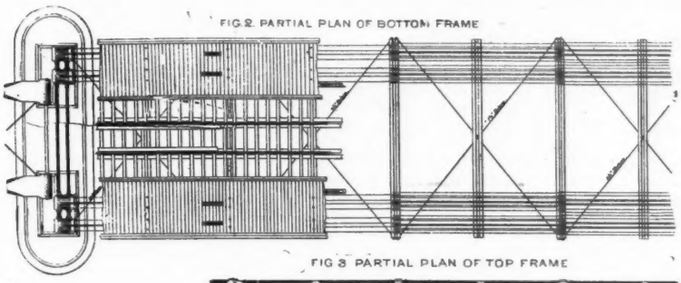
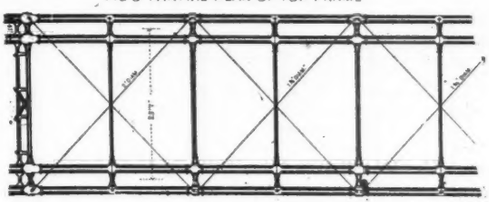


FIG 3. PARTIAL PLAN OF TOP FRAME



SCALES
Figs 1 2 3 4 5.
Fig 6

FIG 5. END VIEW
AT LONG POST AT BRACE C.

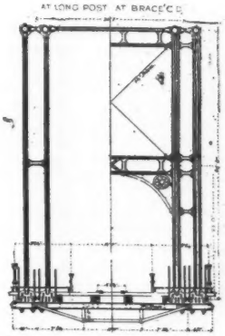
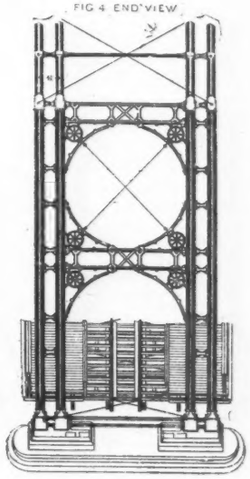
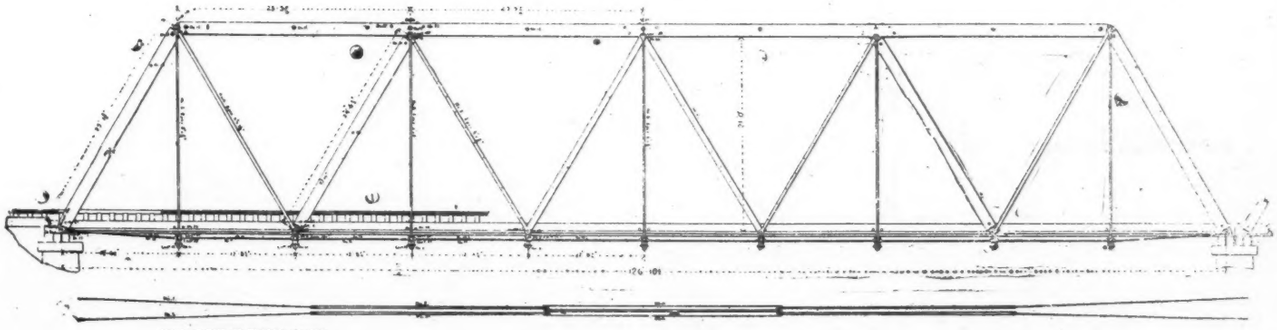


FIG 4. END VIEW

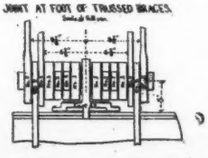


BUILT BY THE LOUISVILLE BRIDGE & IRON CO.

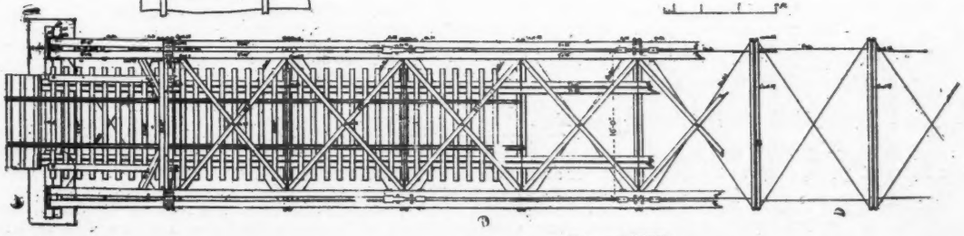
PLATE XVIII.



JOINT AT FOOT OF TRUSSED BRACES.



GENERAL PLAN
OF
BLUE RIVER BRIDGE.
J. M. & I. R. R.
Louisville Bridge & Iron Co.
March 17 1870.



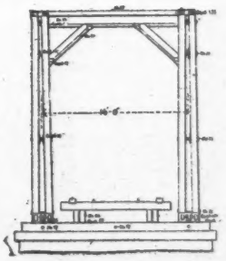


PLATE XIX.

and of the lower chord are made of wrought iron and all or most of the compression members of wood.

In the South and West a great number of these combination bridges have been used. They are cheaper than bridges of all iron parts and are more permanent than wooden bridges, the wooden members being less liable to destruction from fire and decay, where the timber is only used in compact forms and under compressive strains. They are generally designed so that the greater part at least, of the iron members can be used again, when it becomes desirable to renew them as wholly iron bridges. While more permanent than wooden, they are less so than iron bridges.

The question of the adoption of this class of structure instead of all wood or all iron bridges must be determined for each locality by the relative economy as determined by their first cost and the financial ability and policy of the railroad.

Their forms are varied according to the preference of different engineers. We illustrate (plates XIV. and XIX.) forms designed by Mr. Alfred Fink, and which have been in general use in past years upon many Southern railroads, especially the Louisville and Nashville Railroad.

This road has been rapidly replacing them of late with wrought-iron bridges of modern type. While excellent bridges can be made of this kind, they should only be considered as an advance from wooden bridges towards the future all-iron bridges.

4. DESIGNING AND PROPORTIONING.

The early wooden bridges and some of the early iron bridges were not designed or proportioned upon any very correct theory. They were large, empirical structures, generally of uniform section throughout their length. Practical experience had led to improvements in methods of counterbracing against partial loads, and in providing for better detail, to obviate the crushing of the timber or slipping of the braces and to take up the looseness arising from the shrinkage of the timber.

In the early days of our railroads so able an engineer as Mr. Kirkwood writes :

"The heavy locomotives used in the freight traffic of railroads, and the great speed of express passenger trains, render massive strength in all railroad bridge structures essential. The many bridges which have been strengthened since they were built, and the many which have had to be removed and replaced by stronger structures, sufficiently attest the mistaken economy of erecting light and cheap frame bridges. The blind confidence which the best carpenters are apt to have in the raw material of their trade and in the rude geometry of its usual combinations, has rendered them unsafe guides to engineers, in the planning of bridge trusses involving irregular and shifting strains, with which their general practice cannot make them familiar. Hence it is that, even now, the engineer will always find it not merely a safe but a necessary rule to make his bridge trusses heavier and stronger than the most intelligent professional carpenter of his acquaintance is likely to consider necessary."

The heavy engines of that day would be very light ones at the present time.

The science of bridge proportioning was yet undeveloped. The best that the engineer could do was to make the bridges stronger than heretofore, solely on the facts brought out by past experience.

The first attempt to analyze the strains in skeleton bridge trusses appears to be the work of Mr. Squire Whipple, the inventor of the Whipple bridge—the prototype of the present most generally adopted form of truss now in use in America. His book was published at Utica, N. Y., in 1847. It does not seem to have been widely known till a much later date. For Mr. Herman Haupt, who had an extensive experience in building wooden railroad bridges, and whose treatise on bridge construction, published in 1851, was long an authority, states in his preface :

"If any work exists containing an exposition of a theory sufficient to account generally for the various phenomena observed in the mutual action of the parts of trussed combinations of woods or metals, the author has neither seen nor heard of it." "The best works on the subject of construction that have fallen into the hands of the author contain but little that will furnish the means of calculating the strains upon the timbers of a bridge truss or of determining their relative sizes."

While the principal material of construction was wood, its cheapness and the practical reasons for making the principal members of the trusses of uniform section made the necessity of proper proportioning less apparent. The advent of iron construction, involving the use of a material of a more expensive character, compelled a better consideration of the relation of the principal parts of a truss to the duties to be performed.

Besides the defective knowledge as to the calculation of the strains, there was a like deficiency in regard to the strength of materials in the forms adapted for skeleton structures, and as to the effect of the concentrated engine loads.

The use of a uniform load of one ton per foot of track for designing all parts of a bridge was in general use some years after 1860, and on many bridges up to even a later date. It was not till about 1870 that a heavier uniform load was adopted for the floor system than was used for the main trusses.

The rapid growth of the traffic on our roads and the constantly increasing loads upon our cars and engines were not fully appreciated until very recent times.

Up to about 1874 the designing and the construction of bridges were, almost exclusively, in the hands of the several bridge companies. Each of these companies had its own peculiar style of bridge; consisting either of a special form of truss, as the Bollman, Fink, Linville, Post, etc., or in the use of patented forms, as the Phœnix, Linville & Piper and American Companies' posts, and other detail parts.

Each company also had its own special geographical field, or lines of railroad, giving it the preference.

Even at points where they did meet as competitors, it was rather as advocates for their special trusses or forms of parts, than as competitors upon any very definite specification.

Though many excellent bridges, considering the state of the art, were built under this system, there were also many very inadequate structures made.

(TO BE CONTINUED.)

AIKEN'S HYDRAULIC METAL TIE MACHINE.

This hydraulic press for shaping metal ties has been invented by Mr. Henry Aiken, of the Homestead Works of Messrs. Carnegie, Phipps & Co., by whom the ties are being manufactured from sheet steel for the Standard Metal Tie and Construction Company, of New York.

We illustrate the front elevation, Fig. 1, vertical cross-sections, Figs. 2 and 4, and horizontal cross-section, Fig. 3. The machine consists of a bed-plate, which weighs 14 tons, with upright frames constituting guides, in which the head or plunger moves, and which, for this purpose, are made of strong metal castings.

There is a cap or entablature which connects the upright frames with strong bolts which hold the entablature to the bed-plate. The moving head is a strong cast frame set between the upright guides and connected by rods with the plungers of double-acting cylinders, mounted on the entablature and provided with inlet and outlet ports at opposite ends, so that the plungers can be moved in either direction by proper management of the valves.

The moving head is on one side provided with a series of cutters or dies for cutting or slotting the metal blank, and on the other side is provided with shearing and bending mechanism for subsequently acting thereon. The cutters or dies are mounted on stools or supports on the upper side of the moving head, and their counterparts are fixed to the under side of the entablature.

In the operation of cutting, the metal blank is interposed between the entablature and the moving head, and is cut by the dies on the ascent of the latter, so as to produce therein the necessary cuts. On the under side of the moving head is bolted a knife-head, the base of which at the middle part is formed in a double-angled shape, shown in the front elevation, and on each side of this part of the knife-head is secured a square-edged knife, so that between the knives there is an intermediate cavity, the base of which is of the double-angled form above referred to.

An anvil-plate is bolted to the bed plate of the machine, beneath the knife-head, the middle part of the anvil being slotted to permit ascent of the moving knife and bender, and the remaining portion of the anvil being flat, so that it may be capable of holding tightly an interposed blank.

For the purpose of forming marginal flanges on the metal blank, bending devices, consisting of metal bars made in form of sectors of cylinders, are employed. At the middle of each of the bending bars is formed a peripheral series of gear teeth, and on each side of the machine is a rack bar, whose teeth are in gear with those on the bending bar, and which are attached to or form a part of the plungers working in hydraulic cylinders.

The manner of operation of the machine is as follows: The plate or blank having been placed between the dies is cut by the ascent of the moving head, and is then placed upon the anvil-plate and is held firmly by depressing the knife-head; while in this position the lateral margins of the plate are bent into upright positions by elevating the plungers, thereby turning the sectors on their axes.

The plunger of the cylinder is then raised, and the knife is thus forced against the plate toward the cavity between the upper knives, and by this means a piece is sheared out from the middle of the plate between the transverse slots, and the plate is slit outwardly from these slots, and at the same time the flat faces of the lower knives bend up within the cavity the lips formed by slitting the plate. With this the tie is complete, and in removing it the ascent of the moving head is utilized for punching and slotting another blank, so that the motion of the plunger in both directions is made effective in the work of the machine. Recently at the Homestead Works this machine was operated at the rate of making 80 ties an hour.

Consumption of Timber in Mines.—In the Anaconda mine alone, near Butte City, Mont., 80,000 feet of timber are put under the ground daily, or at the rate of 30,000,000 a year. At the smelting works at Anaconda, belonging to the same company, there are 180 cords of wood used daily, or 65,700 cords a year. For wood, a 40,000 cord contract is the smallest that will be let, and contracts range in size up to 200,000 cords. Nearly 1,000,000 cords of wood are kept on hand. All the timber used for mining purposes can be legally cut from government land, and the foregoing shows what a heavy draft is being made on the national resources in Montana alone.

Sound Shadows.—Still more interesting than the experiments of Colladon were those made in the Bay of San Francisco in 1874 by Prof. John Le Conte and his son, Mr. Julian Le Conte. The source of sound was not such as would give a definite pitch, like a bell, but the quick, violent, single impulse due to the explosion of dynamite employed in the blasting of rocks which obstructed the channels. The intensity of the shock thus propagated was such as to be felt as a blow on the feet of a person seated in a boat three hundred feet or more from the detonating cartridge, and to kill hundreds of fish. Several vertical posts or piles, each about a foot in diameter, projected from the ground out of the water in the neighborhood. A stout glass bottle was suspended in the water about a foot in the rear of one of these piles, within the geometric shadow determined by lines supposed to be drawn from the cartridge forty feet horizontally away. The bottle was perfectly protected from the shock of the explosion. It was then put in front of the pile. The first shock shivered it into hundreds of fragments. Other bottles, some filled with air and some with water, were similarly exposed in various directions around the pile, and with the same result—destruction, except when within the protecting shadow. The experiments were varied by immersing stout glass tubes, incased in thick paper, horizontally across the direction of the sound rays in water, between two piles which were aligned with the dynamite cartridge. These piles were 12 feet apart, the nearer one being 40 feet from the cartridge. Its shadow, therefore, just covered the second pile, and included the intermediate water, with the middle part of each tube. After an explosion these protected parts were found to be unbroken, while the ends which projected on the two sides beyond the shadow were completely shattered. The boundary between the regions of shadow and noise was sharply defined on the tubes, even at a distance of 12 feet behind the protecting pile.—*From "Sensitive Flames and Sound-Shadows," by W. Le Conte Stevens, in the Popular Science Monthly for November.*

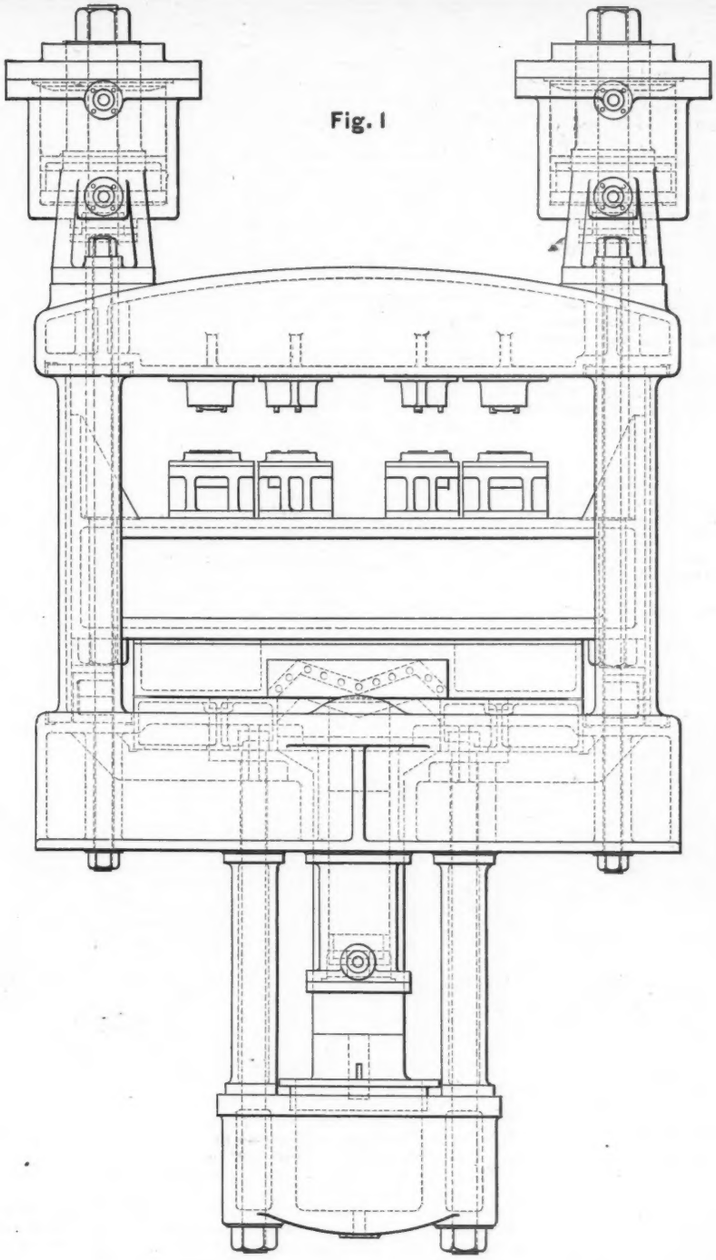


Fig. 1

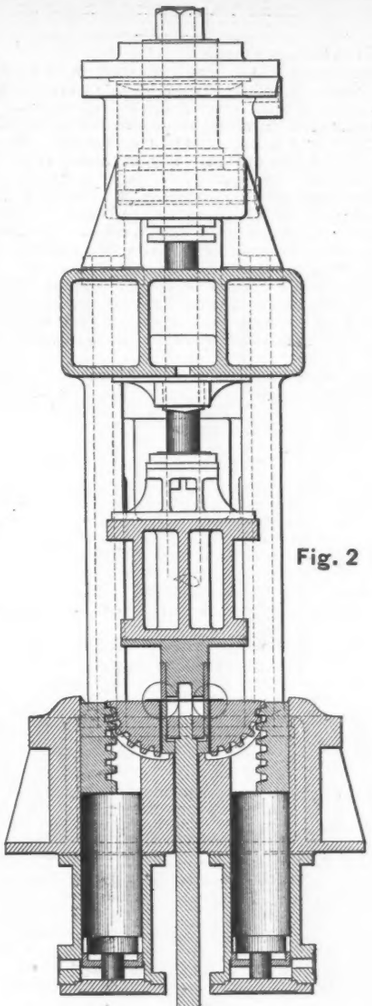


Fig. 2

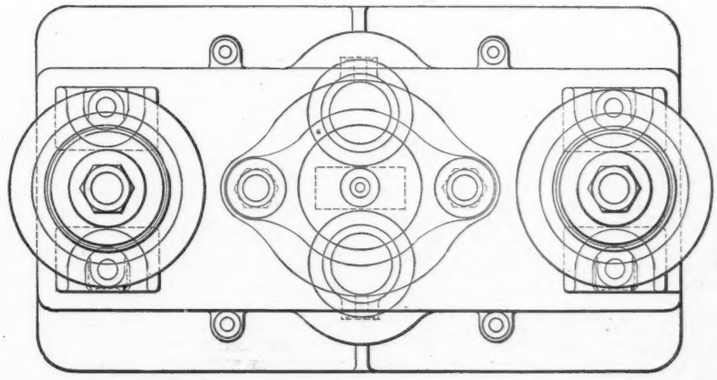


Fig. 3

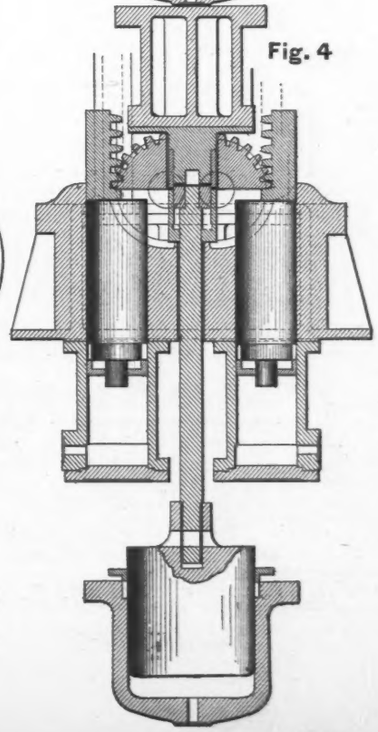


Fig. 4

Scale $\frac{3}{8}$ inch to 1 foot.

SIMONS & CO.'S HOPPER DREDGER.

In view of the numerous undertakings that are in course of execution and contemplated, and in connection with which extensive dredging operations are required, we illustrate a type of dredging machine, which, though well known in Europe and the British colonies, is comparatively unknown to our civil engineers and contractors. It is the patent Hopper Dredger. This vessel combines in one hull, and with one crew, all the useful properties of the ordinary barge-loading dredger and attendant hopper barges.

The débris lifted by the buckets is deposited into the dredger, which has large hopper cavities for its reception; when these cavities or spaces are filled the vessel disengages itself from the dredging moorings and proceeds under its own steam to the place where the material has to be deposited. On the bottom of the hopper dredger are fitted several strong doors; these are opened and the material liberated. The whole operation is carried through in a very speedy and easy manner. The bucket girder with its endless chain of buckets is adapted to operate in a central well opening at either the stern or bow of the dredger, as the circumstances of the case may dictate.

The illustration is that of a hopper dredger with the bucket ladder working through the stern of the vessel. It is being built for the Manchester Ship Canal Company, and will be employed at the Mersey end of the canal, and the material dredged will be deposited outside of the bar. This vessel will carry about 900 tons of débris, and will have ample power and buckets of sufficient size to raise fully 500 tons an hour. It will be capable of dredging to a depth of 35 feet under water level; and in this connection a very valuable improvement has been introduced by the builders, which enables the dredger to dig its own flotation through banks of sand, and also to work in a more limited space than it otherwise could. This is the patent traversing carriage to which the upper end of the bucket ladder is attached. The carriage runs on a horizontal frame and can be moved forward or backward, and in this way project the dredging buckets in advance of the hull of dredger. The

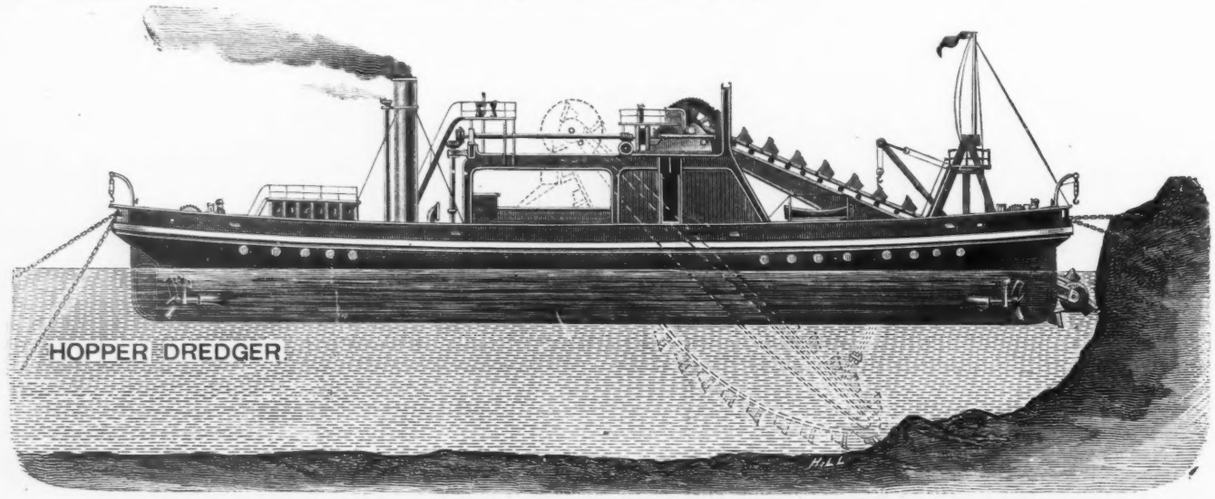


illustration shows the bucket ladder in two positions, and conveys a fair idea of the application of this improvement. This hopper dredger will be constructed wholly of steel, and is to be propelled by four screws, *i. e.*, two at each end of vessel. Its speed will be in the neighborhood of eight miles per hour, when loaded and going ahead, and somewhat less going astern. The navigation of it is controlled by three rudders worked by steam gear from the bridge. Steam appliances are provided for speedily raising the lower end of bucket ladder, also for raising the hopper doors.

Besides the chutes for the delivery of the dredgings into the dredger's own hull, side chutes are provided for loading barges when required.

The engines for driving the propelling, as well as the dredging machinery, are two sets of triple expansion, of the most modern design, and steam is derived from two large steam boilers working at 150 pounds pressure.

Messrs. Simons & Co., of Renfrew, Scotland, are constructing this dredger, and are the inventors of this novel type of machine, and where large dredging operations have to be executed, and more especially where the material to be dredged is of varying quality and quantity, they claim for it greater efficiency, economy and expedition in working than any other existing type of marine excavating plant. At the Paris Exhibition Messrs. Simons & Co. have just received the award of a silver medal for their exhibits.

Hopper dredgers have proved themselves excellent seagoing vessels, and are quite capable of steaming to any part of the world; in fact, a small one was dispatched from Messrs. Simons' yard, on the Clyde, to Japan, and after encountering very rough weather on the voyage arrived safe at Yokohama, where it is employed in connection with the harbor improvement at that port.

Fast Ship Loading and Unloading at Buffalo.—The steel steamship "America" recently arrived at Buffalo at 3.15 o'clock in the morning with a cargo of 104,000 bushels of corn. At 9.15 o'clock at night, 18 hours after her arrival, she was ready to sail, having on board 2,700 tons of coal, besides her fuel. She was unloaded, too, at what has been considered a slow elevator, and her coal cargo was not loaded in unusually fast time. She saved her fuel time, about six hours, by getting the soft coal from a barge while dicharging her corn.

Nearly 6,000 tons of corn and coal were handled in but little longer time than from daylight to dark. And yet, had the "America" been sent to a house with two elevating legs—and Buffalo has half a dozen such—the entire work could have been done in six hours less.

PROPOSED LEAD MINERS' CONVENTION.

The following circular has been issued by the Utah Ore Producers Association, with the object of holding a convention at Salt Lake City in the interests of the lead mining industry:

OFFICE UTAH ORE PRODUCERS' ASSOCIATION.
170 S. MAIN STREET, SALT LAKE CITY, Utah, Oct. 23, 1889.

SIRS: A convention of American ore producers, smelters, refiners, dealers and transporters and those interested in the prosperity of the mining industry, will be held at the headquarters of the Utah Ore Producers' Association at Salt Lake City, Utah, on the 20th day of November, at 10 o'clock A. M., for the following purposes:

1. To decide upon ways and means to gain, by united action, the protection of the great lead mining industry to which it is by law entitled, and which is withheld from it by the recent ruling of the Treasury Department.

2. To consult and determine what united action shall be taken by the lead mining States and Territories with regard to the National Silver Convention to be held at St. Louis, Mo., on the 27th day of November.

We are all aware that the ruling of the Treasury Department, if persisted in, will be fatal to our industry, but we are also confident that we can by united and judicious action obtain a just protection for lead mining.

To attain this end unity of action is essential.

It is thought by some that the silver convention at St. Louis offers a favorable opportunity to present our case in behalf of lead and gain powerful influence for our cause. Others, on the contrary, feel that a representation of the lead mining interests at that convention would be ill-advised and possibly injurious to the lead industry.

Considering the diversity of opinion, it is deemed best by all that those representing that industry should meet prior to the silver convention and arrive at unanimity of opinion, that no false step may be taken, and that the action of delegates from the lead mining districts at that convention may be upon well-defined lines and have all the weight of united and organized strength.

It is important that delegates from all communities interested in the prosperity of lead mining should be present at the meeting herein called, either in person or by proxy. It is suggested that many delegates appointed to the silver convention can conveniently attend this convention on their way to St. Louis, and where this cannot be done meetings should be held, and resolutions passed expressing the wishes of those interested, and delegates elected with power to appoint proxies resident here.

A full attendance is desirable, and the convention will decide the number of votes to which each State and ferritory is entitled.

The ruling of the Treasury Department, while undeniably a disappointment, is not a decisive defeat. We are determined to continue the fight, and several ways have been suggested and carefully considered by which it can still be won. Which one, or how many, of these ways shall be pursued is a question to be discussed and decided when our convention meets. It rests with us to redouble our efforts and compel a victory.

Please communicate with us at once what action you will take in the matter. Respectfully, THE UTAH ORE PRODUCERS' ASS'N,

W. G. VAN HORNE, Secretary. WM. F. JAMES, President.

Improvements in Cookery.—The custom of cooking quickly is in part a matter of choice, and in part due to the necessity to which a great many working people are subject to cook their meals quickly or else to go without hot breakfasts and dinners. Another great obstruction to improvement in the art of cooking is the almost universal misconception that the finer cuts of meat are more nutritious than the coarser portions, coupled with an almost universal prejudice among working people against stewed food. This prejudice is doubtless due to the tasteless quality of boiled meat; boiling toughens each of the fine fibers and deprives the meat almost wholly of its distinctive flavor. All these blunders and misconceptions must evidently be removed before any true art of cooking can become common practice. The more necessary, however, does it become to invent apparatus in which meat can only be simmered and cannot boil, as in the Aladdin cooker, and also to invent a stove or oven in which neither meat nor bread can be overcooked, dried up, or rendered indigestible by too much heat, as in the Aladdin oven. Next, people must be persuaded that a better and more nutritious breakfast can be made ready to eat, as soon as the family are out of bed, by putting meat stews, oatmeal, brown bread, and many kinds of puddings, into the cooker, and simmering all night by the use of a single safe lamp, than in any other way.—*From "The Art of Cooking," by Edward Atkinson, LL.D., in the Popular Science Monthly for November.*

IMPROVED ROAD MACHINERY.

The advantages of a strictly first-class machine for making and repairing roads are so self-evident that a knowledge of the conditions under which such machines can be operated and the nature of their construction should lead to their largely increased adoption.

The one we have selected for illustration and description, on account of its popularity and general merits, is the "American Champion," which we show as adapted to light gutter work. Some of the important points in this machine, as described by its manufacturers, and, apart from its general excellence of construction, are as follows:

It has a reversible blade and can be instantly and easily adjusted for right or left action by the operator without leaving his position. No person of intelligence needs telling the advantages of this in hilly sections, yet the advantages of the reversible feature are but little less valuable in level sections when fully understood. The acute angles of blade are used when plowing the gutters and carrying material to the center of the road, while a less acute angle is often preferable on a steep bank or in leveling. When desired to drift forward a quantity of earth to fill a chuck hole, build a water bar, to fill up at the end of a bridge, or to scrape off the top of a hummock, the blade is brought to a right angle or square across the road.

The pitch adjustment, whereby the blade can be instantly tilted backward for plowing moist ground or forward to get the proper inclination of edge to penetrate a hard baked crust of clay or gumbo or stony soil, is a very important and novel feature, and is patented.

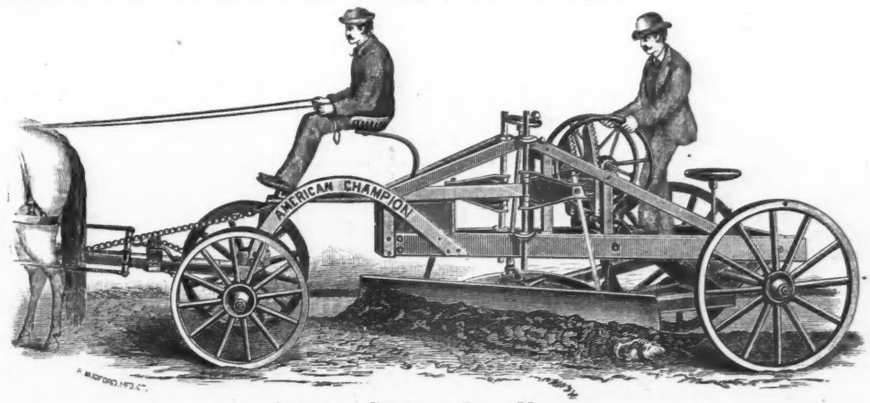
Rotary operating wheels, in connection with their pedal brakes, and claimed to be the most complete as well as the safest and easiest operating leverage ever applied to a road machine, are used. This device not only gives sufficient power to operate with the greatest ease, but at the same time works the blade its full scope of movement up and down, without the necessity of adjusting catches or pins. The counterpoise mechanism consists of a spring which supports the weight of the blade and semicircle, practically making it as easy to raise as to lower the blade.

A shifting hind axle insures at all times a steady motion to the machine by the extra width of the track, and at the same time can be instantly adjusted to bring either right or left wheel in line with the front wheel and cutting point of the blade. It will be seen that the front and hind wheels thus form a rolling land slide against the bank, and at the same time the other hind wheel is carried beyond the furrow discharged by the blade.

By intermediate adjustment. it enables clearing or deepening ditches to be done without cutting into the bank. This feature is of vital importance, as it insures steady running, and adds one-third to the capacity and effectiveness of the machine, and no practical road official can fail to appreciate the improvement. The position of the operator is perfect, as he is never required to stoop or reach upward, and is always faced straight with his machine with the entire blade in full view, and with good advantageous handhold on each operating wheel, one hand being ordinarily sufficient for the management of either wheel; and he has no occasion to leave his position to effect any change of angle or other adjustment. The machine is of light draft, the long shiftiug hind axle giving it a wide tread and steady motion without slipping, and yet it can be turned in the smallest possible space. It is thoroughly well built on scientific principles, and its trussed frame furnishes the maximum rigidity with the minimum wright.

Aside from its being an easy way to build and grade roads, it is an economical way, and the manufacturers have testimonials from owners and users to the effect that the machine has saved its cost the first year. J. I. Case, owner of Jay-eye-see; L. W. Rundlett, City Engineer of St. Paul, Minn.; Russell Thayer, Superintendent Engineer of Fairmount Park, Philadelphia, all have these machines in use, and when men of such intelligence recommend them to the public they must be good.

This machine is manufactured by the American Road Machine Company, of Kennett Square, Pa., which company has made an especial study of road plows, scrapers, and every device used in road-making.

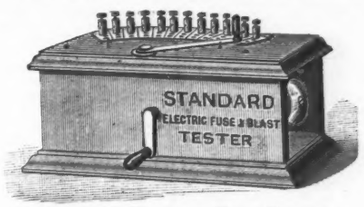


AMERICAN CHAMPION ROAD MACHINE.

Smokeless Powder.—Lord Armstrong, the English gun-builder, does not appear to be satisfied with the new smokeless powder, far in advance as it is of the article it is intended to supersede. He admits that this powder—of which nitrate of ammonia is the base—produces a lesser volume of smoke, and a smoke which more quickly disappears than that of ordinary gunpowder, but still it is, in his opinion, not quite the article for British use. Lord Armstrong expects that "cordite" will more nearly supply the desired conditions for naval use, "being impervious to damp, and, above all, absolutely smokeless." If "cordite" should be found to fulfill all the conditions demanded by the naval service, its employment will, in his opinion, "probably work a revolution in modern armament, and render the use of quick-firing guns not only an advantage, but a necessity."

STANDARD ELECTRIC FUSE TESTER.

The standard electric fuse and blast tester is the first machine of the kind ever placed upon the market for this purpose, notwithstanding electric fuses have been very generally used during the past fifteen years. This machine is intended only to test the electric fuses or exploders before placing them in the charge holes to blast, to make sure they are all right and perfect, so as to avoid the expense, trouble and danger of a miss fire or an unexploded hole, or to make doubly sure. With the same machine you can test your charge before firing it to make sure all connections are perfect before putting your leading wire to the battery. If your blast



STANDARD ELECTRIC FUSE TESTER.

fails after such testing, the trouble must be with your battery. All blasters know the trouble and danger caused by a bad fuse in the charge; it necessitates the drawing of the charge hole or redrilling another hole, and many accidents and deaths have occurred in performing these dangerous operations.

It is claimed that these dangers can be avoided by the use of the standard electric fuse and blast tester, and the construction of the machine is so simple that any superintendent or blaster can easily understand how to use it.

The machine does not cost much, and, with proper care, should last for years without repairs.

The size of the machine is 5 inches × 6 inches × 10¼ inches, and weighs 10 pounds. It will test from one to twelve fuses at a time; it has thirteen binding posts on top, with a brass switch for completing the circuit.

To test the fuse, one of the connecting ends of the fuse wires is placed in the binding posts, commencing at the right-hand post, placing the other wire of the same fuse in the second post, one wire of the second fuse in the same post, and the other wire of the second fuse in the third post, and so on until all posts are filled, leaving one single wire in the two end posts, and two wires in all the others. Placing the switch on the brass base of the last or left-hand post, the handle should be turned slowly a few times in the usual way, when the bell will ring. If the fuses are all good, then take them out and put in another lot.

If the bell does not ring, there is one or more bad fuses in the lot. To find out defects, bring the switch to the first or right-hand binding post, turn the handle. The bell will always ring when the switch is on the first post, because that makes a complete circuit. Now place the switch on the second post and turn the handle. If the bell rings the first fuse is good, and so on; when the defect is discovered, put in another fuse in its place, then throw the switch back to the extreme left, and turn the handle again. If the bell rings all are good; if it does not ring, bring the switch back to where you left off, and try each one separately until you find the next bad one; take it out and replace as before.

To test the entire blast before firing, simply place the ends of your leading wire in the right and left binding posts, turn the handle when the bell will ring. Leading wire should often be tested separately, as it is liable to crack and break in bending, and have imperfect joints; its heavy insulation makes it difficult to find these defects without a tester.

This fuse tester is manufactured by James Macbeth & Co., 128 Maiden Lane, New York.

Abolition of Import Duties in Chili.—The Department of State is officially informed that a law has been enacted by Chili, to take effect four months from August 30th, 1889, abolishing import duties on machines and tools for the use of agriculture, mining trades and industries; pipes or tubes, composed of copper, bronze or iron; galvanized or ungalvanized knees, joints, "Ts," and other such necessary articles; iron or steel wire, galvanized or ungalvanized, up to the number fourteen (14) inclusive, and copper wire, or insulating composition for transmission of electric currents; telephonic and telegraphic instruments, insulators; iron or steel posts and other special necessaries for telegraphs and telephones; the material of iron or steel for the permanent way of steam or horse railways and for portable railways; wheels, axles and felloes of iron or steel for railways and the cars for portable railways; iron in plates.

THE CATORCE MINING DISTRICT.

Written for the Engineering and Mining Journal by R. E. Chism, M.E.

(*Continued from page 242.*)

The porphyry dykes which form a prominent feature of this district are all nearly all parallel to each other with a general course which varies rom due north and south to about 30 degrees to west and east of north or outh, so that these dykes form a system at right angles to the vein system.

The dykes cross the metallic veins, disturb them, and sometimes cut them off in a very perplexing manner. The largest of these dykes is for a large portion of its length at east 25 meters (83 feet), and is nowhere less than 10 meters (33 feet) wide. There is a tremendous blowout near the mouth of the Dolores Trompeta tunnel on one of the branches of the main dyke. The subsidiary dykes vary in width from a foot or so to 8 or 10 feet. The dip of the dykes is very nearly or quite perpendicular, and always toward the west.

The filling of the dykes is in most cases a kind of porphyry, in which the feldspar predominates; in other cases the material is more like eruptive granite. In the vicinity of a silver vein the filling is yellow, and so decomposed that its separate ingredients are lost to view.

The water-line in the veins of Catorce is from three to five hundred feet (100 to 150 meters) below the surface, and determines a marked difference in the mineral contents of the veins, but none in the characteristics of their formation. Both below and above the water the veins are of a regular banded structure with alternations of richer and poorer streaks across their width. There are numerous horses of the country rock, which are sometimes, in fact quite often, impregnated with mineral, and there are some dislocations or slips apart from those caused by the intersection of the porphyry dykes. In the latter case, however, there is generally little difficulty in finding the continuation of the vein. The local knowledge of the vein structure has led to the belief that the intersection of two of the metalliferous veins is likely to afford a bonanza or rich ore chimney, even though the mineral contents of the veins away from the intersection should be of low grade.

The Catorce veins are undoubtedly true fissure formations, and the explorations upon the two most important veins, the Veta Madre and the San Agustin, show them to be well formed and permanent to a depth of about 1,000 feet (300 meters) below the outcrop, and there is every probability that most of the veins in the district will extend to the lowest depths that can be reached by the art of mining.

MINERALOGY.

In Catorce, as in other mining regions in Mexico, the mineral, or rather the precious metal bearing contents of the veins, are distinguished into two classes, called "*colorados*," or red ore, and "*negros*," or black ore. In a general way it may be stated that the colorados occur from the water level up and the negros from that level downward.

The colorados are so named because the silver minerals are accompanied by oxides of iron of a red color. There is also a large amount of iron sulphate in most of these ores. The silver minerals in the colorado ores are *plata verde* (green silver), which is a mineral peculiar to the Catorce district, and which consists of a mixture of bromide and iodide of silver with a little chloride; *plata ceniza* (ashes of silver), a kind of powdery chloride of a dirty gray color; *plata cornea*, which is our old friend, horn silver; *plata blanca*, or native silver, and *plata color de rosa* (rose-colored silver), a kind of native silver of a reddish tinge. The accessory minerals beside the iron oxides are manganese oxide in small quantity and carbonate of lead. The gangue is quartz and calcite.

Between the zones where the colorados and negros are plainly defined there is a transition zone where the two classes are found mixed, or, at least, side by side.

In the La Luz mine this zone exists at a depth of about 300 meters (1,000) feet, and is probably some 125 meters (400 feet) in depth. In the Concepcion the transition commences at about 100 meters (330 feet), and the zone of the negros has definitely commenced at about 200 meters (660 feet) in depth from the surface.

In the San Ramon, Internacional and Sereno mines no colorados have been found, as the negros commence from the surface down.

The negros ores consist of the unaltered sulphides of silver accompanied by sulphides of antimony and arsenic as intimate associates and by pyrites of iron and copper, some zinc blende and a much larger quantity of galena as accessory minerals. The characteristic dark color of the negros is due to the presence of manganese minerals in some of the ores. The gangue of the negros contains quartz in greater quantity than occurs with the colorados; hence the transition and lower zones are generally much harder than the colorado zone, although this characteristic is very variable from mine to mine, or even from one working to another.

In the Veta Madre or Purissima vein the calcite abounds most in the eastern portion of the vein and coincides with the appearance of large quantities of chlorides and bromides, etc., of silver. The San Agustin vein has less quartz than the Veta Madre and like that vein the calcite, which in this case carries more or less of steatite, is more abundant to the east and the silver ores also.

The Refugio or San Geronimo vein carries black quartz and more oxide of iron than is generally found in the other veins.

In the widest veins of this district the proportion of ore worth forty ounces a ton or upward to the whole mass of vein matter is probably from about one-fifth to one-third; that is, from five to three tons of rock have to be mined to obtain one ton of ore of the above richness. The ore raised in the district may be roughly divided into three classes. About eight per cent. of the output are lead ores, principally carbonates; some forty per cent. are sulphide ores (negros), and the remainder, fifty-two per cent., are "plata verde," the chlorides, iodides and bromides.

The carbonate and galena ores were formerly smelted in Mexican furnaces, but the cost of treatment was so high that there was little or no profit to the miner, so that large blocks of such ores were left standing in the mines where they occurred in quantity. Latterly these lead ores have been knocked down for exportation with very profitable results. The chloride and bromide ores are also very often sold under the present circumstances when rich enough to bear transportation. The lower grade ores are treated in the *caso* or on the *patio*. Most of the haciendas for this purpose are in the town of Cedral, about 18 miles to northeast of Catorce, but the San Agustin mine has its works in the little town of Los Catorce, before mentioned. The details of these metallurgical operations do not come within the scope of this paper, so I will leave them with this passing reference.

As to the value of the ores I have but very little data. The lead carbonates of the Concepcion mine are said to have some 53 per cent. of lead and 42 ounces of silver per ton. The sand carbonates in the same mine have 45 per cent. of lead and about 20 ounces of silver per ton. The ore from the Internacional mine is about 43 per cent. lead, 6 per cent. antimony, and has from 14 to 50 ounces of silver per ton. The sulphides of silver are said to have from 500 to 650 ounces per ton when pure. The total production of the Catorce mines in December, 1888, was said to be some 750 tons a week, which was divided among the mines in about the proportion noted in the table given further on, which, however, represents the slightly increased production of the month of July. The average value now and then would be some 75 ounces of silver per ton.

DEVELOPMENT.

The mines of Catorce are not of very great depth compared with those of other noted mineral districts. The deepest of all from the outcrop is the Purissima mine on the Veta Madre, which is some 1,600 feet below the mouth of the highest shaft. Of absolute depth the most notable is the Santa Ana mine, which is said to have a drift at 366 meters (1,200 feet) below the level of the plaza of Catorce. In the San Agustin mine the deepest working is the Purissima tunnel, 200 meters (660 feet) below the level of the same plaza. The deepest working in the Concepcion mine is about 182 meters (600 feet) below the plaza.

One of the most remarkable things in the Catorce district is the great amount of tunneling that has been done for the development of the deposits. I have already noted that the topography of the district is very favorable to this mode of exploitation on account of the depth of the gulches and the steepness of their sides, as well as the approximate parallelism of the gulches to the more important veins. Accordingly this disposition has been eagerly availed of by the miners of the district, as will be seen from the following list of the tunnels around Catorce, which is as perfect as possible with limited data:

Name of tunnel.	Name of the mine.	Length of tunnel.	Cross section.		Meters in length to gain one meter in depth.	Remarks.
			Width.	Height.		
		Met.	Met.	Met.	Met.	
La Purissima	San Agustin	2,200	3·5	3·5	5·5	Half finished.
Dolores Trompeta	Dolores and others.	1,700	4·0	4·0	6·4	
Cochino	Concepcion	1,130	4·0	3·5		
Padre Flores	Padre Flores	400	3·50	3·25		
Boquiero	S. Juan Boquiero	430	3·0	3·00	5·41	
San Joachin	S. Jose Villanos	385				
Coyote	Santa Ana	806	.....	.....	.....	This includes some branches.
Refugio	La Luz	1,250	5·00	3·00	3·00	This includes some branches.
Chorro	San Agustin	1,800				
La Cruz	"	600				
Refugio	San Agustin vein	130				
	Total length	10,830				
	Or	35,700 feet, about 6·64 miles.				

NOTE.—The absolute depth of any tunnel cannot be calculated from a comparison of the third and sixth columns of the above tables, as the tunnels have often been prolonged beyond the point of greatest depth or the length stated includes branches.

The cross-section dimensions of the tunnels will be noticed to be very large. They have been so made with a view to facilitating ventilation during the driving, an object that could have been attained at less expense by machine ventilation. It has not been necessary in any of these mines to lay a double track, so that the cross section, however large, is no more effective for exploitation than a much smaller one would have been.

As Catorce had the first steam engine in Mexico, it had also the first machine drills. The work with these was done in the Purissima tunnel on the San Agustin vein. The driving on this work was commenced by hand labor, but it was soon seen that no man then living would see it finished in that way, and it was resolved to resort to machinery. The tunnel was accordingly fitted up with air-compressors of American make, which were used to drive Feroux drills, such as had been used in the Mt. Cenis tunnel. The drills were mounted on carriages, six drills to a carriage, with an air tank behind. For the necessary repairs to the machinery in such an inaccessible spot as Catorce, there was a machine shop fitted up with lathes, drill-presses and other machine tools and appliances for making castings, etc. The tunnel was finished in thirteen years to a communication with the main shaft of the San Agustin mine at a distance of 2,200 meters (7,220 feet) from its mouth. This main shaft is almost as notable in its way as the tunnel, as it is nearly twenty feet square (6 meters exactly). It had a steam hoisting engine and two horse whims, which, however, are not necessary since the completion of the tunnel.

To get dump room at the mouth of the tunnel, which is situated in a very narrow gulch, four massive gothic arches of masonry were thrown over the bed of the stream. Each of these arches is five meters (16 feet) wide and 11 meters (36 feet) high and over 300 feet in length.

The tunnel is lined with masonry for 100 meters (330 feet) from its mouth, and has a cross-section of five by five meters for several hundred meters, although the average section is as stated in the table. There are 3,200 meters of tramway in the tunnel, its branches and approaches. This is of three-foot gauge, laid with steel rails of 20 pounds to the yard. Each meter of this tramroad is said to have cost, with ties, connections and labor, etc., $7.75, Mexican, in place. The grade of the tunnel is 2.5 meters per 1,000, or 0.0025 per meter. The trams are moved by horses, and one small horse can bring out two cars with about four tons of ore on each car.

The Chorro tunnel is at a level 170 meters (560 feet) higher than the Purissima tunnel, and communicates with the same mines. It is also pro-

vided with a tramway, and with a full set of substantial buildings at its mouth. There is also a short tunnel called the Refugio which taps one of the mines on this same San Agustin vein.

The Dolores Trompeta tunnel in the northeastern part of the district was projected to strike the Compromiso shaft, now of the Concepcion Company. A lawsuit has sprung up, however, and for several years the tunnel has remained unworked a few hundred meters from the desired spot. No less than nine veins have been cut in the one thousand meters that the excavation has advanced. All of these veins have presented more or less ore, but none have been worked very far beyond their intersection with the tunnel. The widest of these veins was thirteen meters (40 feet) and the narrowest 1½ metres (5 feet) wide. The tunnel cuts through the center of the prominent mountain known as the Barriga de Plata, and has several hundred feet of working ground above it almost entirely virgin which has never been explored, owing to the mistaken policy of the owners of the property.

(TO BE CONTINUED.)

Generation of Electricity Direct from Coal.—Prof. John Perry, F. R. S., in a recent address in England, said; "Now, I pointed out in 1881 that if coal or gas were burnt in a voltaic cell as zinc is burnt, and an electro-motor were used, we could utilize as mechanical energy not merely one-tenth but nearly nine tenths of the energy of coal. I pointed out then that coal gas could be burnt in this way, but there were two difficulties—1st, the apparatus required was too large per horse power developed; second, the apparatus required was too expensive. The first of these difficulties has already been got over by a correspondent, who is in some sense my partner. We see our way to developing one useful horse power per cubic foot of volume of apparatus. Unfortunately, the difficulty of expense still remains. But I am firmly convinced, and I have good reason for my belief, that all the difficulties will be got rid of, and that coal will actually be burnt in this way. Even to those of you who may not be troubled about the general question of economy, the mere possibility of an armor-clad being able to carry enough coal for a voyage at full speed round the world, must appear to be an important result.

New Telephone System.—Efforts are about to be made in Glasgow to introduce a new telphone called "The Pulsion." This telephone is a purely mechanical one, and is exceedingly simple in construction, merely consisting of a steel india-rubber lined button, to which the annealed steel wire is attached, a copper diaphragm, and sound-conducting springs. No electricity is used, and there are consequently no batteries to refill or insulation to get out of order. As tested last week on a line about a third of a mile in length, the sounds heard were clearer than those transmitted by the most perfect and best known telephones at present in use. There was no straining necessary to catch the sound even at a distance of a foot or so from the transmittor, and when the ear is placed against the instrument the ticking of a watch at the other end could be distinctly heard. The line can be tapped and communication obtained at any point by simply placing a hat or other hollow article against the line and using it as a diaphragm. As yet the Pulsion telephone is still in its infantile stage. It has only been worked to a length of six miles, and for the present it is intended to introduce it in Glasgow privately, and for short distances.

Paris Mechanical Congress.—During the meeting of this Congress, when various papers were read and discussed, it became apparent that the terminology adopted in mechanical work by different engineers is far from uniform, and a commission of seven members was accordingly nominated with instructions to draw up a list of terms which should, if possible, be adopted by the whole Congress at its final sitting. This has been done, and the following resolutions were passed: (1) The word "force" is not to be employed except as a synonym for "effort." Such terms as "transmission of force," or "the force of the engine," should never be employed. (2) The term "work" shall signify the product of a force, and the distance through which it acts. (3) The term power (puissance) should be exclusively employed to express the ratio of work and the time during which it has been performed. (4) The numerical expressions of these terms in the metrical system are the following: The unit of force is the kilogramme as defined by the International Committee on weights and measures; the unit of work is the kilogrammeter; the unit of power may be given in two measures—either as the horse-power, equivalent to 75 kilogrammeters per second, or the "Poncelet," equivalent to 100 kilogrammeters per second; one Poncelet equals 981 watts, and one kilowatt equals 1·0193 Poncelet. (5) The expression energy is to be taken as a generalization of the terms work, impetus, momentum, heat, etc. (6) The units adopted for mechanical work are length, time, and force, instead of length, time, and mass, as adopted for electrical work.

BOOKS RECEIVED.

In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review in another page of the Journal.]

Manual of Assaying Gold, Silver, Copper, and Lead Ores. By Walter Lee Brown. Published by E. H. Sargent & Co., Chicago, Ill. 1889. Third edition. Pages, 488. Illustrated. Price, $2.50.

Geological Survey of Arkansas; Annual Report for 1888. Vol. III. The Geology of the Coal Regions. By John C. Brauner, Ph. D., State Geologist. Printed by the State. 1888. Pages 122. Illustrated.

Mineral Statistics of the United Kingdom of Great Britain and Ireland with the Isle of Man for 1888. Prepared by Her Majesty's Inspectors of Mines. Published by the Government, 1889. Pages 115.

PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent-Office.

PATENTS GRANTED OCTOBER 29TH, 1889.

413,649. Hydrocarbon Burner. Henry C. Davis, Terre Haute, Ind.
413,658. Steam Boiler. Charles Gorton, New York, N. Y.
413,686. Process of Extracting Gold or Silver by Chlorination. Jean B. A. Simonnet, Clermont-Ferrand, France, Assignor to Samuel Wilkins Cragg, Baltimore, Md.
413,691. Regenerating Furnace for Boilers. William Swindell, Allegheny, Pa.
413,705. Car or Truck. Henry Aiken, Homestead, Pa.
413,708. Electric Safety Lamp for Mines. Theophilus Coad, Forest Gate, County of Essex, England.
413,727. Car Coupling. Patrick McEntee, Montgomery, Minn.
413,731. Conduit for Electric Railways. Cecil P. Poole, Lynchburg, Va.
413,758. Combined Air Heater and Steam Boiler. Peter Littler, Thomas Haslam and John Moorcroft, Liverpool, County of Lancaster, England.
413,759. Sight-Feed Lubricator. George M. Marchant, Huddersfield, County of York, England.
413,764. Manufacture of Weldlass Chains. Hippolyte Rongier, Birmingham, County of Warwick, England.
413,766. Burner for Gas Generator. DeWitte Stearns, Des Moines, Iowa.
413,768. Apparatus for the Extraction of Gold by Chlorination. Claude T. J. Vautin, London, England.
413,769. Apparatus for Separating Solutions of Metallic Salts from Pulverized Material Mixed Therewith. Claude T. J. Vautin, London, England.
413,771. Car-Axle Lubricator. Henry F. West, Gloucester City, N. J.
413,796. Coal-Cutting Machinery. William N. Symington, Brooklyn, N. Y.
413,808. Process of Leaching Ores. John S. MacArthur, Pollokshields, County of Renfrew, Scotland.
413,810. Transformer or Converter for Alternating Electric Currents. Leonard Paget, New York, N. Y., Assignor of one-half to Charles J. Kintner, same place.
413,815. Mold for Casting. Francis D. Taylor, Brockville, Ontaria, Canada.
413,855 Stamp Register. Elton B. Henthorn, Buckner, Mo.
413,869. Method of Driving Tunnels. William L. Saunders, New York, N. Y.
413,873. Lubricator. Melvin Sholl, Terrace, Utah.
413,890. Truck for Cable or Electric Cars. Sumner A. Bemis, Springfield, Mass.
413,896. Furnace. Virgil W. Blanchard, New York, N. Y., Assignor to Joseph A. Davis, same place.
413,897. Brick for Furnaces. Virgil W. Blanchard, New York, N. Y., Assignor to Joseph A. Davis, same place.
413,898. Grate for furnaces. Virgil W. Blanchard, New York, N. Y., Assignor to Joseph A. Davis, same place.
413,901. Gas Cooler for Furnaces. Virgil W. Blanchard, New York, N. Y., Assignor to Joseph A. Davis, same place.
413,902. Fuel-Feeder for Furnaces. Virgil W. Blanchard, New York, N. Y., Assignor to Joseph A. Davis, same place.
413,908. Steam Generator. Virgil W. Blanchard, New York, N. Y., Assignor to Joseph A. Davis, same place.
413,913. Furnace Door. Virgil W. Blanchard, New York, N. Y., Assignor to Joseph A. Davis, same place.
413,914. Water Heater. Virgil W. Blanchard, New York, N.Y., Assignor to Joseph A. Davis, same place.
413,922. Furnace. Virgil W. Blanchard, New York, N. Y., Assignor to Joseph W. Davis, same place.
413,925. Lubricator and Cooler for Shafts. Virgil W. Blanchard, New York, N. Y., Assignor to Joseph A. Davis, same place.
413,938. Solder-Melting Furnace. Elisha Hawes, Sacramento, Cal.
413,956. Adjustable Clamp Joint for Railroad Rails. Arthur J. Moxham, Johnstown, Pa.
413,965. Oscillating Steam Engine. Charles B. Rice, Chicago, Ill., Assignor to the Rice & Whitacre Manufacturing Co., same place.
413,976. Water Wheel. Edward Stern, Philadelphia, Pa.
413,988. Mode of Drawing Wire. William Wallace, Ansonia, Conn.
414,173. Combined Gas and Compressed Air Engine. Emanuel Stevens, Brussels, Belgium, Assignor of one-half to James Morison Burnup, London, England.
414,001. Car-Coupling. Charles A. Anderson, Rockford, Ill.
414,019. Hopper Mechanism for Blast Furnaces. John G. Carlinet, Philadelphia, Pa., Assignor of one-half to Gorden Strobel & Laureau, Ltd., same place.
414,027. Balanced Slide Valve. Henry D. Dunbar, North Hartland, Vt.
414,029. Car Axle Lubricator. Rudolph Faas, Chicago, Ill., Assignor to the Standard Car Axle Lubricator Co., same place.
414,030. Steam Hammer for Forging Steel Wheels. James Facer, Philadelphia, Pa.
414,031. Process of Manufacturing Metallic Wheels. James A. Facer, Philadelphia, Pa.
414,033. Process of Making Silicon Copper. Walther Feld and George Von Knorre, Charlottenburg, Germany.
414,037. Furnace. George F. Gallagher and Thomas B. Moore, Rochester, N. Y., Assignors of one-sixth to Henry Gallagher, same place.
414,038. Apparatus for the Manufacture of Gas. Charles Gearing, Pittsburg, Pa., Assignor to Charles M. Gearing, same place.
414,044. Force-Pump. Eugene A. Heath and James May, Nonpareil, Neb.
414,051. Furnace for Calcining Ores. Henry Hutchinson, London, England.
414,062. Railroad Rail. Hosea W. Libbey, Boston, Mass.
414,079. Hydrocarbon Burner. Joseph Reid, Oil City, Pa.
414,083. Coffer-Dam. John E. Robinson, Philadelphia, Pa.
414,092. Railroad Spike. William D. Thurmond and Robert M. Goodwyne, Forsyth, Ga.
414,109. Steam-Hammer for Forging Steel Wheels. James A. Facer, Philadelphia, Pa.
414,119. Ore-Concentrator. Almarin B. Paul, San Francisco, Cal.
414,134. Process of Refining Iron. George Archbold, New York, N. Y., Assignor to Hiram Gilbert Bond, same place.
414,139. Coal Cage. Ralph B. Campbell, Streator, Ill.
414,155. Two-part Chair for Railroad Rails. Henry S. Goughnoor, Johnstown, Pa., Assignor to the Johnson Company, same place.
414,156. Steam Pumping Engine. Charles L. Mahnicke, Columbus, O., Assignor of two-thirds to John D. Wells and Wm. N. Weiman, both of the same place.

DIVIDENDS PAID BY MINING COMPANIES DURING OCTOBER AND SINCE JANUARY 1ST, 1889.

Name of Company.	Paid in Oct.	Paid since Jan. 1st.	Name of Company.	Paid in Oct.	Paid since Jan. 1st.
Alaska, Alaska	.....	25,000	Lexington, Mont.	.....	64,000
Alma, Idaho	.....	15.000	Mammoth, Utah	10,000	30,000
American & Nettie, Colo	.....	0,000	Mt. Diablo, Nev	10,000	40,000
Aspen, Colo	.....	280,000	Monitor, Dak	.....	25,000
Atlantic, Mich	.....	80,000	Montana Lt., Mont.	82,500	206,250
Boston & Mont., Mont	.....	400.000	Morning Star, Colo	.....	25,000
Caledonia, Dak	8,000	80,000	Napa, Cal	10,000	30,000
Calliope, Colo	10,000	30,000	Navajo, Nev	.....	40,000
Calumet & Hecla, Mich.	500,000	1,500,000	N.Y. & Hond. R., C.A.	.....	30,000
Central, Mich	.....	40,000	New Guston, Colo	50,000	100,000
Colorado Central, Colo	.....	55,000	North Star, Cal	.....	50,000
Confidence, Nev	.....	24,960	Ontario, Utah	75,000	750,000
Cons. Cal. & Va., Nev	.....	756,000	Osceola, Mich	.....	50,000
Copper Queen, Ariz	.....	70,000	Pamlico, Nev	.....	12,000
Cœur d'Alene, Idaho	.....	55,000	Parrot, Mont.	.....	36,000
Derbec Gravel, Col	10,000	20,000	Plumas-Eureka, Cal	.....	70,312
Daly, Utah	37,500	375,000	Poorman, Colo	.....	15,000
Deer Creek, Idaho	.....	10,000	Quicksilver, Cal., Pref.	64,368	193,107
Dunkin, Colo	10,000	40,000	Quincy, Mich	.....	290,000
Evening Star, Colo	.....	12,500	Silver Cord, Colo	.....	50,000
Granby Mg. & Sm., Mo.	.....	20,000	Silver Mg. of L. V., N. M	.....	25,000
Granite Mt., Mont	.....	1,800,000	Sierra Nevada, Idaho	.....	20,000
Homestake, Dak	12,500	162,500	Small Hopes, Colo	.....	25,000
Hecla, Mont	15,000	150,000	Tamarack, Mich	120,000	440,000
Ivanhoe, Colo	.....	10,000	Ward Cons., Colo	.....	10,000
Idaho, Cal	15,500	147,250	Webb City, Mo	.....	4,400
Illinois, N. M	.....	20,000	Woodside, Utah	25,000	25,000
Iron Silver, Colo	.....	100,000	Young America, Cal	.....	10,000
Jackson, Nev	.....	5,000			
Jay Gould, Mont	.....	74,000	Total, 56 companies	1,065,369	9,043,279

PERSONALS.

Mr. John W. Mackay sailed for Europe on the "City of Paris" on Wednesday.

Mr. John C. Dovey, of Latrobe, Pa., has been appointed Superintendent of the Fire Creek Coal and Coke Company, of Fire Creek, West Virginia, on the line of the Chesapeake & Ohio Railroad.

Mr. James W. Wayne, of Detroit, Mich., has been appointed to a position in the drawing room of Messrs. Russell & Co., of Masillon, Ohio, advertised as No. 610 in our column of "Positions Vacant."

The Council of the American Gaslight Association has recommended to the Superintendent of Census that William Mooney, of New York City, be entrusted with the investigation relating to the collection of gas statistics for the report of the census of 1890.

Col. William F. Switzler, ex-Chief of the National Bureau of Statistics, is reported to be dangerously ill at his home in Columbia, Mo. His mental condition is said to be greatly impaired, and he is physically broken down. A stroke of paralysis is anticipated by his physicians.

Mr. D. L. Demmon, of Boston, Secretary of the Butte & Boston Company; A. S. Waitman, of Chicago, a director of the same company; Captain Daniell, Superintendent of the Tamarack and Osceola mines, and Captain Johnson Vivian, Superintendent of the Franklin mine in the Lake Superior copper district, have visited Butte, Mont.

Referring to the statement in our issue of October 19th, that Messrs. Marks & Wolfe, the proprietors of the *Financial World and Mining Record*, had been arrested in London for attempting to blackmail the promotors of the Crystal Reef Gold Mining Company, it should have been stated that they are the proprietors of a new daily paper called the *Mining Record*, the error having arisen from a carelessly worded cablegram.

OBITUARY.

Emery S. Eckis, in the employ of the Linden Steel Company, Limited, of Pittsburg, died at his residence in Canton, Ohio, on the 24th ult., after a very short illness.

Henry Wintor, of Philadelphia, who was largely interested in the Logan Iron and Steel Company, Crane Iron Company, and various enterprises, died in that city on the 28th ult. of paralysis, aged 86 years.

John Lowry Hobson, of New York City, a son of George Y. Hobson, of the firm of Alsop & Co., and formerly United States Consul General to Chili, died this week. He was at one time associated in business with the banking firm of Duncan, Sherman & Co., but had recently retired on account of poor health.

Clement B. Grubb, at one time one of the largest iron makers in Pennsylvania, and great-grandson of the discoverer of the Cornwall iron hills, died at Lancaster, Pa., on the 31st ult, aged 74 years. He retained at the time of his death an interest in Cornwall ore hills and owned the St. Charles and Henry Clay furnaces in Columbia. He leaves a large estate.

Francis M. Root, well known as the inventor of the famous Root Rotary Blower, died on the 25th ult., at his residence in Connersville, Md., of typhoid fever, aged 65 years. During most of the summer Mr. Root had been in Europe, where he has an extensive branch of his rotary blower factory. At the time of his death he was president of the First National Bank of New York City, and Root's Rotary Blower Manufacturing Company.

Joel Barlow Moorhead, a well-known iron manufacturer and capitalist of Philadelphia, Pa., died on the 25th ult., at the age of 77 years. While Mr. Moorhead's business was principally that of an iron manufacturer, he had been concerned in a number of business enterprises. He was for several years a railroad and canal builder, and at the time of his death was the largest holder of the stock of the Monongahela Navigation Company, of Pittsburg.

Christopher Geiger, one of the oldest ironmasters in Pennsylvania, died at his home in Lancaster, Pa., of pneumonia, on the 28th inst., aged 80 years. He was born in Berks County, educated near Philadelphia, and when 19 years of age was manager of Buckley & Co.'s forge, at Pottstown, Pa. He was actively engaged in the iron business until a few years ago, when he retired, devoting his attention to the management of his ore banks in Lancaster County.

INDUSTRIAL NOTES.

It is reported that the Calera Land Company will build a 50-ton charcoal iron furnace at Calera, Ala.

No. 1 furnace of the Glendon Iron Company at Easton, Pa., was blown in on the 26th ult. It was out of blast for repairs.

The Ingersoll-Sergeant Rock Drill Company, of New York, has been awarded the first prize, a gold medal, for its exhibit at the Paris Exposition.

The National Carbon Works, of Cleveland, O., were damaged by fire, on the 25th inst., to the estimated extent of between $30,000 and $40,000.

Macungie furnace, of the Macungie Iron Company, Limited, at Macungie, Pa., which has been idle for some time undergoing repairs, will be blown in during the present week.

It is reported that the Excelsior or Peat furnace, of Ishpeming, Mich., will soon be placed in blast after six years' idleness. Marquette and Cleveland capitalists are said to be figuring on buying the furnace.

The Pequest furnace, at Belvidere, N. J., it is reported, has been bought by the Lackawanna Iron and Steel Company, and will be put in operation in a short time. It has been idle for more than two years.

Messrs. L Dermigny & Co., manufacturers of family ice machines, New York, have been awarded a medal at the Paris Exhibition, 1889. It is stated that this is the only medal awarded for such machines.

Mr. Thomas J. McDermot, of Biddeford, Me., has purchased the property of the Rockland Brass & Iron Foundry Company, Rockland, Me., and will proceed to enlarge and operate it. The plant has not been operated for years.

It is rumored that the Tennessee, Coal, Iron and Railroad Company, and the De Bardeleben Coal and Iron Company, of Bessemer, Ala., owning a controlling interest in the Eureka Company, of Oxmoor, Ala., are negotiating to consolidate.

The Westinghouse Machine Company, of Pittsburg, Pa., report sales for October, 1889, up to and including October 21st: Juniors, 30 engines, 935 horse power; Standards, 16 engines, 645 horse power; Compounds, 30 engines, 2,510 horse power; a total of 76 engines.

The Stilwell & Bierce Manufacturing Company, of Dayton, Ohio, has been awarded by the Academie Nationale, of France, its grand gold medal for its Victor turbine, now on exhibition at the Paris Exposition. The company informs us that its sales are rapidly extending to all parts of the world.

The Baltimore & Ohio Railroad Company have just received from the Baldwin Locomotive Works a compound engine, constructed on the English plan, with which important tests are to be made. If the latter are satisfactory, the engine will be adopted, since it burns from 20 to 25 per cent. less fuel than the ordinary locomotive. In a recent run from Baltimore to Philadelphia, twenty-two minutes was made up. The engine has been tried with both local and express trains.

Anthracite blast furnace No. 1, of the Reading Iron Company, at Reading, Pa., was put into operation on the 31st ult. The furnace has been idle seven months, ever since the suspension of the company. It will turn out 550 to 600 tons a week. Furnace No. 2, with an equal capacity, will resume, it is expected, in three weeks. One of the Keystone blast-furnaces, owned by the same company, will also start up in a few months. It will turn out 700 tons a week. The other Keystone furnace, also owned by this company, now in operation, turns out 350 tons.

The heavy advance in the price of steel, according to a Pittsburg paper, has induced a number of firms in the Ohio Valley to consolidate for the purpose of erecting a steel plant. The capital stock is $1,000,000. It is proposed to build a mill for the manufacture of slabs and steel billets to be used in their own mills. If there is a surplus it will be put on the market. The firms interested in the concern are the Mahoning Valley Iron Company, Youngstown Rolling Mill Company, Cartwright, McCurdy & Co., and Andrews Bros. & Co. It is thought that one or two other concerns will take stock in the new steel company.

The Martin Process and Chemical Company, of New York City, is in the hands of the Sheriff on execution for $23,278 in favor of W. E. Zabriskie on promissory notes. The company manufactured a fireproofing paint. The present management took control August 25th, 1888. The capital was $450,000, of which, it is said, $75,000 was paid in cash. Francis S. Kinney, the cigarette manufacturer, was president, but resigned last July. It is said he furnished a large part of the capital, and after he retired the company was unable to continue. An officer of the company said on Tuesday that it had failed for lack of cash, and that the liabilities outside of the judgment would not exceed $1,500.

CONTRACTING NOTES.

Manufacturers of machinery, engineers and contractors should consult our directory of "Contracts Open" on page xx. This week proposals are invited for the following work: Cement; Dredging; Railroad Construction; Material; Elevators; Steam Heating; Broken Stone; Slating, etc.; Material and Labor.

The Geo. P. Whitaker Company has let contract for erection of a blast furnace at Principio, Md., to Gordon, Strobel & Laureau, Limited, of Philadelphia, Pa.

The Germania Works at Kiel, Germany, have obtained the contract for building the first of four iron-clads for the German Government. The new vessels are to be of 10,000 tons burden and are to to cost $2,500,000 each.

The gunboat "Petrel" has been formally accepted by Secretary Tracy from the contractors, the Columbian Iron Works Company, of Baltimore, Md. Her contract price was $243,000, but of this amount $48,400 has been retained by the government as penalty for failure to complete the vessel in the time specified in the contract. She is about two years overdue.

The Westinghouse Electric Light Company, of Pittsburg, Pa., it is reported, has secured the contract to erect a central station for a very large electric light plant in Pekin, China. The machinery has been shipped. The city is to be lighted throughout with incandescent lamps, whose number runs into many thousands. Electric men consider this a great triumph for America, because the competition with European companies was very keen.

At the Navy Department, on Thursday, bids were opened for supplying steel for the construction of the two 3,000 ton cruisers, to be built at the navy yards of Brooklyn and Norfolk. The material for each cruiser was divided into six classes, as follows: Class A, thin plates, 672 tons; class B, thick plates, 190 tons; class C, wrought steel, 10 tons; class D, steel shapes, 106 tons; class E, rivets, 70 tons; class F, castings, 83 tons. The cruiser to be built at Brooklyn is known as No. 7, and for this the bids were as follows: Bethlehem Iron Company, Bethlehem, Pa., class C, $7,476; Carnegie, Phipps & Co., Pittsburg, class A, $65,856; class B, $30,856; class D, $20,160; Linden Steel Company, Pittsburg, class A, $71,500; class B, $27,664; Oliver Iron and Steel Company, Pittsburg, class E, $7,840; Standard Steel Casting Company, Thurlow, Pa., class F, $31,606. For Cruiser No. 8, to be built at Norfolk, the bids were as follows: Standard Steel Coasting Company, Thurlow, Pa., class F, $31,606; Oliver Iron and Steel Company, Pittsburg, class E, $7,840; Linden Steel Company, Pittsburg, class A, $71,500.80; class B, $27,664; Carnegie, Phipps & Co., Pittsburg, class A, $658.56; class B, $30,856, and class D. $20,160; Bethlehem Iron Company, class C, $7,476. The contract will be awarded in a few days.

Bids were opened at the Navy Department on the 26th inst. in a second endeavor to secure satisfactory proposals for the construction of the three 2,000-ton cruisers authorized by the Act of Congress of September 7th, 1888. The bids did not include armament or equipment. The requirements of the advertisement were that each vessel shall show a maximum speed of at least 17 knots an hour, maintained successfully for four consecutive hours; that for every quarter knot above that speed the contractor shall receive a premium of $25,000; that a vessel failing to make an average speed of 16 knots an hour for four hours shall be rejected; the cost of each vessel, excluding premiums and the cost of armament, but including equipment, is limited to $700,000. There were five bids opened as follows: Union Iron Works, San Francisco, for one cruiser, $775,000; for two cruisers, $1,450,000; for three cruisers, $2,054,001, or $684,667 each. N. F. Palmer, Jr., & Co., New York, for one cruiser, $674,000; Columbian Iron Works, of Baltimore, for one cruiser, $625,000; for two cruisers, $1,225,000. This bid, which was the lowest, was from the contractor for the construction of the gunboat Petrel. Bath Iron Works, Bath, Me., for one cruiser, $675,000; for two cruisers, $1,350,000; for three cruisers, $2,025,000. Harrison Loring, Boston, for one cruiser, $674,000. All these bids were of class 1, the hull and machinery to be built according to the plans and specifications of the department. The Secretary on the 28th inst. awarded the contract for building two of the 2,000-ton cruisers to the Columbian Iron Works and Dry Dock Company, of Baltimore, for the sum of $1,225,000. The contract for the third one has been awarded to Harrison Loring, of Boston. N. F. Palmer & Co., of New York, bid the same amount, but subsequently relinquished the claim in favor of Mr. Loring.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting Machinery or Supplies of any kind will notify the "Engineering and Mining Journal" of what he needs, his "Want" will be published in this column.

Any manufacturer or dealer wishing to communicate with the parties whose wants are given in this column can obtain their addresses from this office.

No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning American goods of any kind, and forward them catalogues and discounts of manufacturers

in each line, thus enabling the purchaser to select the most suitable articles before ordering.

These services are rendered gratuitously in the interest of the subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GOODS WANTED AT HOME.

308. Second-hand Corliss engine, in good condition to develop between 70 and 75 horse power at 80 lbs. pressure, ¾ cut off. Georgia.

309. Three wooden railway bridges, each with a draw; one of the bridges 5,062 feet long; each 20 to 22 feet wide. Piles to be creosoted or treated by some other approved method. South Carolina.

310. Railroad supplies for railroad nine miles in length, standard gauge, rails 56 lbs. per yard. Cars same as rapid transit road, Staten Island. Two noiseless dummies to haul four-car trains. South Carolina.

311. Saw-mill outfit with capacity of 50,000 feet per day. Matching and flooring machines. Alabama.

312. Railroad material for a log railway, six miles in length. Alabama.

313. Tobacco machinery. Four tobacco presses, and four box screws, 10 or 12 inch ram. North Carolina.

314. Stills. Two for distilling water and six for distilling flowers. Georgia.

315. Machinery. Hoisting engine, cages, cars, and all necessary machinery for first-class coal mine work.

316. Rails. Two and a half miles of very light second-hand iron or steel T rail. Alabama.

317. Gas pipe. Two thousand feet of second-hand 1-inch gas pipe.

318. Four power machines for cutting boiler tubes from 1 inch to 6 inches in diameter. New or second hand; must be in perfect order. New York City.

319. Six-horse-power engine and boiler. Connecticut.

320. Carpet beater or tumbler. Connecticut.

321. Exhaust fan. Connecticut.

322. Four or 6 horse-power engine and boiler, pulleys, hangers, shafting, belts, etc. North Carolina.

323. Paper-box machines. North Carolina.

324. Manilla wrapping paper and bags. North Carolina.

325. Planer, matcher or other wood-working machinery. Georgia.

326. Boiler and engine, 25 to 35 horse power; shafting, pulleys, belting, etc. Georgia.

327. Asphaltum in small lots; Trinidad, both common and refined, and Egyptian, in small lots. Pennsylvania.

328. Engine, 80 to 100 horse power. Kentucky.

329. Lime kiln machinery; for two large kilns, with daily capacity of 120 barrels. Kentucky.

330. Propositions for sinking an artesian well. Texas.

331. Stone crusher, second-hand, in good order. New York City.

332. Machinery for large furniture factory. West Virginia.

333. Hydraulic elevator for hotel. Kentucky.

334. Propositions for heating hotel with steam heat. Kentucky.

335. Engine and boilers; 100 horse power engine and two return flue boilers, 100 horse power each. West Virginia.

336. Water pumps, both direct acting steam and power centrifugal pumps. West Virginia.

33. Seven or nine-foot copper vacuum pan, with pump; also, wood clipper. West Virginia.

338. Price of 4-inch square iron; also, mill spindle for pair heavy millstones. North Carolina.

339. Stave knife, 36 inches long, and single knife, 22 inches long. Florida.

340. Boiler, 40 to 50 horse power (good second-hand preferred); also steam elevator; state age, condition, etc. New York City.

341. Automatic engine and boiler, 50 horse power. Texas.

342. Wood-working machinery. Planer and matcher to run in connection with retail lumber yard. Six-inch four-side moulder. Self-feed rip saw and siding attachments. Wood turning lathe. Texas.

343. Corn mill, about 300 bushels capacity, with belting, shafting, etc.

344. Electric light and cold storage machinery for hotel. Arkansas.

345. Grading implements. Kansas.

346. Cheap and light apparatus for bricking argentiferous "fines" previous to smelting. Capacity of press (which must use only slightly moist material), from 5,000 to 10,000 bricks per day. Steam power. Drying room very scarce. Idaho

347. Wanted information as to prices, etc., of copper pipe six or eight inches in diameter. New York.

348. Machinery for manufacturing straw paper. North Carolina.

359. Hand reel and 500 feet of hose for water works. Virginia.

AMERICAN GOODS WANTED ABROAD.

349. Laundry machinery; wringers and mangles; made by the very best makers, as the quality of the goods sold must be guaranteed. New Zealand.

350. Knitting machinery. New Zealand.

351. Agency wanted for some good make of well-drilling outfits. New South Wales.

352. Wanted, full particulars, prices, etc., of the giant steel welding and hardening compound. New South Wales.

353. Wanted, prices and discounts for graphite grease for wire ropes. New South Wales.

354. Corn flour; wanted full and exclusive agency for selling upon a 2½ per cent. commission cash. Australia.

355. Oil stoves, cheap, for country trade. Australia.

356. Clothes wringers. Australia.

357. Wheelbarrows; price of nested per 100. Australia.

358. Scales; wanted exclusive agency. Australia.

GENERAL MINING NEWS.

Owners of unpatented mining locations are reminded that only a short time remains wherein to do the annual assessment work required by law to protect their ground from relocation. According to the latest ruling of the Land Office, says a San Francisco paper, if the owner of an unpatented location is engaged in performing the annual holding work on the 1st of January and prosecutes it until the requisite amount is completed, such mining ground is not subject to relocation. To avoid litigation, however, it is better to have the annual holding work completed before the close of the year.

ALABAMA.

LANGDON IRON COMPANY.—We are informed that this company, recently organized by Mr. P. D. Langdon, will have its 40-ton car-wheel iron furnace completed by February 1st. The company will use ores from property of Alabama Ore & Railroad Company of the following analysis: Silica, 11·77; iron, 54·27; manganese, ·64; phosphorus, ·038.

ARIZONA.

YUMA COPPER AND SILVER MINING COMPANY.—We are officially advised that the company is developing what promises, thus far, to be a good copper property. The ore consists of carbonates, oxides and silicate of copper, averaging 10 per cent. in copper, and carrying $12.50 per ton, silver and gold. The company has expended nearly $100,000, and intend to so thoroughly develop the property that if it gives it up, there will be no use of any one else trying it. The company will not be producing for some months. The greatest depth is 325 feet.

PIMA COUNTY.

DUQUESNE MINING AND REDUCTION COMPANY.—An application for the charter of this company will be made on November 20th, to operate copper mines in Washington Camp, to the purchase of which we referred in our issue of September 7th. The incorporators are George Westinghouse, Jr., Charles A. Ashburner, John Caldwell, H. H. Westinghouse and Walter D. Uptegraff. Mr. Ashburner will leave for Arizona shortly and personally superintend the work of starting the operation of the mine.

YAVAPAI COUNTY.

ST. LOUIS & YAVAPAI MINING COMPANY.—After a year or more of idleness, it is said that this company is to be reorganized. Over a year ago the property was closed down for lack of funds. The property was deeply in debt and bonded for $50,000, which had been incurred in development work, the erection of a 10-stamp mill and the construction of water works that cost $32,000. Last June the property was sold out under the bonds for the sum of $50,000 and bought in by the trustees of the bondholders. Steps have since been taken, says the St. Louis *Republic*, to organize a new company, and articles of incorporation have been applied have been applied for in Illinois by C. B. Burham, Ernest Michallis and Edwin Hayden, who were largely interested in the old company. The proposed company is to be known as the New Yavapai Mining Company, with a capital stock of 500,000 shares. Of these 500,000 shares 200,000 will be taken by the bondholders at 25 cents a share, and the balance (300,000) will be placed in the treasury, which every stockholder of the old company will have the right to purchase at 10 cents a share. The Yavapai at one time was one of the most prominent and active stocks in St. Louis. It is the intention of the new company to sink 100 feet deeper in the Tip-Top and to develop the Minnie mines.

CALIFORNIA.

NEVADA COUNTY.

CHAMPION.—This property, says the Nevada City *Herald*, has been doing well for the past seven months. Since May the company has paid an indebtedness of over $20,000, has built an addition to the mill and has declared a dividend. The company propose to push the shaft down 600 feet further.

SIERRA COUNTY.

PLUMAS-EUREKA GOLD MINING COMPANY.—The accounts of this company for the half-year ending June 30 showed a balance to the credit of profit and loss of £13,401, out of which the directors recommended that a dividend of 1s. 6d. per share, free of income tax, amounting to £10,546 17s. 6d., be declared, and that the balance remaining be carried forward. The net earnings of the half year amounted to £11,769 10s. 3d. In respect to the Uncle Sam mine, although the appliances were imperfect, gold was produced to the value of £7,719; the expenditure amounted to £5,882, leaving a surplus of £1,837, which the directors recommended be carried forward to the next account. The dividends paid up to the present time on the Eureka, including the one about to be paid, amounted to £437,692; the mill had crushed 1,835 tons during the past six months. A dividend of 1s. 6d., free of income tax, has been declared.

SIERRA BUTTES GOLD MINING COMPANY, LIMITED.—The thirty-ninth ordinary general meeting of this company was held in London on the 17th ult. The chairman explained the position of the company's three mines, from which it appeared that the operations on the Sierra Buttes for the half year, owing to the extremely poor quality of the ore mined and milled, had resulted in a deficiency of £761. Notwithstanding all the money spent and the large amount of prospecting work done, but little success had attended the endeavors to discover ore of good quality. Since the Sierra Buttes mine was acquired by the company in 1870 down to June 30th last it had produced gold to the value of £1,273,885, and the dividends paid during the same period amounted to £314,933, equal to 60s. 6d. per share. Prior to the purchase of the mine by the company its gold produce was £391,010, thus making its total production £1,664,895.

COLORADO.

The Denver Short Line Railway Company, which was recently incorporated in Colorado with a capital stock of $3,000,000, has perfected its organization by electing the following board of directors: David H. Moffat, Walter S. Cheesman, Samuel N. Wood, Edward O. Wolcott, and Roswell E. Briggs. The original incorporators were Sylvester T. Smith, Samuel N. Wood, Edward O. Wolcott, Roswell E. Briggs, and Andrew S. Hughes. It is understood that the road is to be built in the interest of the Denver & Rio Grande. The survey calls for a route from a point in the boundary of the Arapahoe and Douglas counties, between Littleton and Acquia, southwesterly up the valley of the South Platte River to Lidderdale on the Colorado Midland, to Buena Vista on the Rio Grande road, to Grand Junction through Salt Lake City. The terminus will be at Elko on the Southern Pacific. The company has acquired the right to build a railroad with all its appurtenances, also a telegraph and telephone service along the line of the road, and the purchase and operation of coal lands and mines. The new system will hasten the development of the coalfields of Colorado and Utah.

The Carpenter Electric and Storage Company, with a capital stock of $2,500,000, has been incorporated in Denver, Colo. The directors are: H. H. Carpenter, of New York; Edward Eddy, Wm. H. James, Dennis Sullivan, James B. Grant, Wm. A. Johnston and Lewis A. Kent, of Denver. The object of the company is to exploit Carpenter's newly-patented storage battery, the main feature of which consists in the use of plates made of cerussite, or native carbonate of lead, which is molded into blocks, perforated with holes, and enclosed in an envelope of thin sheet lead. The Denver parties named own mines which produce quantities of cerussite, for which there has heretofore been no demand, and one object in organizing an electric company is to utilize it.

BOULDER COUNTY.

MADELEINE MINING COMPANY.—The new twenty-five stamp mill of this company, situated north of and adjacent to the Columbia mine in Ward district, started up recently for the first time. The mill was built by the Hendrie & Bolthoff Manufacturing Company, of Denver. The batteries are divided into two sections, one of ten and the other fifteen stamps. The mill is supplied with a forty horse-power engine and boiler. Water to supply the mill is brought in a ditch from the headwaters of Left Hand Creek across the Ni-Wot Mountain. The superintendent states that the ore yields from $8 to $14 under stamps, and that the concentrates bring from $40 to $60 per ton. At present the ore is delivered to the mill by quartz wagons. It is stated that the company will put in a track and tram the ore from mine to mill in cars.

GILPIN COUNTY

NEW CALIFORNIA, LIMITED.—The semi-annual report of this company's directors show that during the first six months of 1889 3,919·42 ounces of gold were obtained from 5,193·96 tons of ore. The mining profits for this period have been returned at £6,992; and the directors paid in August a dividend of 9d. per share, or at the rate of 7½ per cent. per annum, on account of same. The 1,900 level west, the point of first importance in the California Hidden Treasure mines, has been advanced, and the rich ore body (first discovered in the 1,800 level) encountered. The connection with the No. 2 winze, 1,800 level, was advised by cable on July 9, since which date the manager has roported a continuous ore body 4 to 5 feet in width, carrying some 30 per cent. of smelting ore, assaying, by latest advices, 4 ounces 15 pennyweights gold, and 14⅛ ounces silver per ton. A winze No. 3, 150 feet ahead of present workings, has been sunk from the 1,800 level to a depth of 85 feet, the smelting ore at this point yielding per assay 8 ounces 9 pennyweights gold and 27½ ounces silver per ton. The company having completed the purchase of the Governor Adams and Rhode Island claims, the directors, in consultation with Captain Rickard, before his departure from England for Colorado, agreed on a plan of active development. Returns for the six months show that the total production was as follows: Milling ore, 5,010·64 tons, $40,014.35; smelting ore, 183·32 tons, $15,155.85; concentrates, 9,219·80; total, 5,163·956 tons, $64,890. Receipts from custom

milling, $10,000.99 ; grand total, $74,390.99. The general average of the output ($12 40) is equivalent to a yield of 15½ pennyweights of mill gold per ton.

HINSDALE COUNTY.

CROWN POINT MINING COMPANY.—This company has purchased the Crown Point mine in Schafer's basin, 14 miles from La City, on Henson Creek, it is stated, for $20,000. The property has been worked under bond for six months.

LAKE COUNTY.

SMALL HOPES CONSOLIDATED MINING COMPANY.—Secretary C. A. Cameron informs us that the cash balance of this company on October 1st was $11,000 and the reserve fund $55,000.

PITKIN COUNTY.

DEEP MINING AND DRAINAGE COMPANY.—The claims owned by this company, to which we referred in the ENGINEERING AND MINING JOURNAL of Sept. 14th and Oct. 26th, and which as already mentioned, is sinking a deep shaft 300 feet east of the Enterprise tunnel, are the Homestake, Big Chief, and the Little Chief, lying at the base of Aspen Mountain. The company is enlarging and sinking the old shaft, four by eight feet, depth 230 feet, to five by fifteen feet in the clear, with ten by twelve inch timbers, Nevada square sets, four feet six inches, a three compartment shaft, two hoisting chambers to be applied with safety cages, and one air-tight pumping chamber five feet six inches. The work is under the management of Mr. Eben Smith. Mr. Ronald Morrison has a contract to sink the shaft 1,500 feet if necessary to reach the contact and catch the lode on its dip. Two hundred and ten feet have been sunk since Oct. 1st.

FLORIDA.

DUNNELLON PHOSPHATE COMPANY.—This company has been organized with a capital of $1,200,000, and has bought of John F. Dunn and associates, it is stated, 13,000 acres of land along the Withlacoochie River, near Dunnellon, in Marion and Citrus counties, upon which has recently been discovered a large deposit of phosphatic marl, containing, according to Mr. Dunn, an average of 75 per cent. phosphate of lime or bone phosphate. This company intends at once erecting extensive mining works for operating the property. The names of some of the most prominent incorporators of this company are: John F. Dunn, Ocala; John L. Inglis, Madison; C. K. Dutton, New York; Alexander Wyllis, Scotland; James M. Schumacher, John L. Marvin and E. M. L. Engle, Jacksonville, and others.

DE SOTO COUNTY.

PEACE RIVER PHOSPHATE COMPANY.—Messrs. William D. Hill and Elisha F. Hart, of New York, with Morris F. Knudson and Robert W. Patterson, of Brooklyn; John T. Wilson, of Montreal, Micaja T. Singleton, of Talladega, Ala., and George W. Scott, of Atlanta, Ga., are trustees of this company, incorporated with $1,000,000 capital. It is to operate in Arcadia, Fla., and other places., in the mining of phosphates and other minerals and metals and manufacturing them.

IDAHO.

OWYHEE COUNTY.

PROUSTITE MINING COMPANY.—We are officially informed that this company, formerly having offices in New York, sold its property in Idaho six months ago for claims arising for supplies and labor, and that the company has no assets in New York. A movement is stated to be on foot by the principal stockholders to raise the money necessary to redeem its property from the purchaser and for a working capital, and there is said to be some hope that this will be carried to success. The company is in debt.

KENTUCKY.

GRAND RIVERS COMPANY.—A party of Boston capitalists is at Grand Rivers, Ky., says the Boston *Transcript*, for the purpose of arranging for the immediate development of the property of this company, owning 10,000 acres of coal, iron and town site lands between the Cumberland and the Tennessee rivers where the two streams run nearest to each other, about 20 miles from the Ohio River. The property extends from river to river, over a mile wide, and it is intended to build furnaces for the treatment of brown hematite iron ore which abounds therein, to open up the coal properties and ship at once to New Orleans, where it is claimed that coal can be landed at 12½ cents per ton cheaper than from Pittsburg. According to advices from the locality, many Fort Payne people are on the ground and are showing much interest in the new project. Among those interested and now at Grand Rivers are Messrs. Dore, Breed, Elder and other Lynn, Mass., men; Henry L. Lawrence, A. L. Brown (Brown, Riley & Co.), F. Q. Brown, Treasurer of the Florida Southern Railroad Company, and others. The subscription to purchase the property amounted to $150,000.

MONTANA.

DEER LODGE COUNTY.

KEYSTONE MINING COMPANY.—This company has been organized to operate in Oro Fino district, with a capital stock of $1,000,000. The company is just at present developing the Washington lode. A two-compartment shaft has been sunk on the lode to a depth of 60 feet, and it is stated that all the necessary appliances are at hand for sinking it to a depth of 300 feet.

MINNIE PALMER.—It is now quite definitely understood that work will be commenced, says the Phillipsburg *Mail*, on this mine next month. The present company will soon have sufficient funds raised to proceed with the development work during the winter. Up to the present time there have been 991 feet of work done on this property. The main shaft is down 165 feet, where the water came in too freely to be handled with tubs. They then proceeded to run a tunnel and reached the shaft at a distance of 480 feet, thus relieving it of a good deal of the troublesome water.

SUNRISE MINING AND MILLING COMPANY.—This company has been incorporated, to have its principal place of business in Phillipsburg. The capital stock is $2,500,000, shares $5 each. The incorporators are F. M. Durfee, D. M. Durfee, O. A. Tibbets, Fred Stolks and Edward Heilman.

EUREKA COUNTY.

CORTEZ MINES, LIMITED.—The London directors of these mines have received the following cablegram from the superintendent, showing the results for September: "Production, 53,800 ounces; expenses, $19,500; tons crushed, 835."

EUREKA CONSOLIDATED MINING COMPANY.—At the annual meeting of this company, in San Francisco, last week, 42,934 shares, out of the 50,000 shares of capital stock, were represented, all of which were voted by William Fries. The old management was re-elected, with the exception of W. S. Wood, who resigned from the Board of Directors, and H. P. Bush was elected to fill the vacancy. The old officers were also reappointed. The personnel of the board is now as follows: President, William Fries; Vice-President, P. N. Lilienthal; Secretary, H. P. Bush; and D. Freidenrich and F. A. Benjamin, directors. The Anglo-Californian Bank was appointed treasurer. The secretary's report for the past year shows assets to the amount of $125,936.97, and liabilities of $38,720.27, leaving net resources of $87,206.70. In the president's report he sets aside all probabilities of litigation with the Richmond Company, stating that the value of the ore taken by that company from Eureka Consolidated ground will be restored, and facilities extended to the Eureka Consolidated Company for taking out the remaining ore. The mine report for the year shows that much interesting work has been done, especially in the K. K. ground, referring to which Foreman Burt writes: "I am glad to report the strike in the K. K. sixth level of what appears to be a fine body of ore. We discovered it in the bottom of the northwest drift and have sunk a winze about 20 feet and drifted from there 15 in ore. It has the appearance of being a continuation of the same ore body we have in the winze. In the east end of the ore body, which is 12 feet wide, and on which we have sunk 18 feet in ore, the assays are from $20 to $60 per ton. A drift has been started from the bottom of the winze in which the ore is expected to be cut in about 20 feet, and if ore is struck at that point a big showing will be made."

It is reported that the Diamond and Antelope properties on Prospect Mountain, in this district, have been sold to Mr. Richard Mackintosh, of Salt Lake City, and that a sampling mill is to be built here.

JEFFERSON COUNTY.

Secretary Noble, of the Interior Department, has denied the motion of A. F. Bright and T. T. Nicholson for a review of the departmental decision of March 15, 1889, in the case of Bright & Nicholson against the Elkhorn Mining Company, in which is involved a valuable mineral entry made by said company for the "A. M. Holter Lode" claim, located near Elkhorn.

ILIFF.—Messrs. Word & Smith, of Helena, have bonded this mine, located in Willow Springs district. The amount of the bond, it is stated, being $35,000, which is to run for nine months. Work has already begun under the bond, and a shipment of ore will be made shortly.

JOE SMITH MINING AND MILLING COMPANY.—This company has been incorporated with a capital stock of $2,500,000, shares at $5 each. J. T. Smith, E. M. Smith, L. O. Smith and Henry Gilbert are the incorporators.

LEWIS & CLARKE COUNTY.

CORA.—This mine, it is stated, will be developed extensively this winter, the company having enough money in the treasury for the purpose. Ore in sight will be stoped, and that on dump will be sorted ready for shipment in the spring. The mine is located 16 miles east of Helena, and about 10 miles from the smelter.

LUCKY BALDWIN AND LADY FISHER.—A company composed of Helena parties has been organized to develop these mining claims, located a mile and one-half northwest of McDonald's toll-gate, between the north and west forks of Walker Creeks, a four months' bond having been taken on the properties, the amount of the bond being $5,000. The development thus far done on these claims is but slight; but, according to the Helena *Mining Review*, they have already produced ores of free-milling gold that runs $40 to the ton. A contract has just been let to Mr. F. W. Allen for seventy-five feet of sinking on the Lucky Baldwin, the work of which will commence at once. On this vein there is at present a shaft twenty-six feet deep. The Lady Fisher lode is an east extension of the Lucky Baldwin. At present the company will confine its attention to the latter claim. The officers of the new company are: President, Michael Burns; Vice-President, C. A. Donnelly; Secretary, T. H. Ward; Treasurer, John Horsky.

NEVADA.

ELKO COUNTY.

NEVADA QUEEN MINING COMPANY.—At the annual meeting in San Francisco last week the following directors and officers were elected: P. C. Hyman, president; John E Dixon, vice-president, and Stephen Roberts, John F. Cassell and George W. Grayson, trustees; H. Deas was re-elected secretary. the Bank of California, treasureo; and F F. Coffin, superintendent. The secretary's financial statement showed an overdraft of $13,166. The superintendent's report has the following summing up of the year's operations: "The concentrating plant, of which the company owns one-half, has been finished, and was started on the company's ore. Numerous alterations had to be made to put it in shape to do good work, then the scarcity of water last spring helped to render the run less profitable than it otherwise would have been; but 6,160 tons of ore were reduced, of an average assay value of $15 per ton, which was worked to 80 per cent. The concentrating plant was turned over to the North Belle Isle Company August 1st. The Union mill, of which the company owns one-third, has been completed, and was started April 1st, 424 tons of concentrates being worked, of an average assay value of $174.15 per ton, or a gross value of $73,926 of first-class ore; 101 tons of an average assay value of $203.62 per ton, or a gross value of $20,616, making a gross ore production of 94.54, yielding in bullion $81.546, showing a working percentage at the mill of 86 2-10 per cent The work of sinking the shaft is being pushed as fast as practicable. As soon as it can be sunk to the 650-foot level and a sump excavated the 550 and 650 foot levels will be opened up and the ore body exposed by the winze from the 450-foot level and a crosscut on the 559-foot level will be explored. No other work is being prosecuted and the only expense is the sinking of the shaft."

ESMERALDA COUNTY.

CANDELARIA WATER AND MINING COMPANY.—A force of about 150 men is employed in the mines in the vicinity of Candelaria. It is reported that this company is negotiating for the purchase of the Holmes mining property.

LANDER COUNTY.

MAYSVILLE.—From Col. W. S. Wilson, of these mines, in Pittsburg District, says the Battle Mountain *Nevadan*, it is learned that his new mill is rapidly approaching completion and will start up soon. There are about 300 tons of good ore at the mill and as much more on the dumps at the mines. The ore now at the mill is from the Yreka mine, but ore is being extracted from three other mines.

LYON COUNTY.

NORTHERN BELLE.—Messrs. Herman Zadig & Co, owners of this mining location, adjoining the Lunzac, near Silver City, are about to begin the development of that property on an extensive scale. A shaft is to be sunk, it is said, and the ground prospected to a greater depth than any previous explorations have been conducted in that district. The first 300 feet will be sunk by a horse whim, after which a steam hoist plant will be set up for deeper sinking. Operations will be directed by Superintendent Keating.

STOREY COUNTY—COMSTOCK LODE.

Some definite steps are now being taken to carry out the plan for draining the Gold Hill mines on the Comstock lode, which was outlined in the ENGINEERING AND MINING JOURNAL of September 28th. A meeting of the managers of these mines was held in San Francisco on the 23d ult. The following companies were represented: Crown Point, Belcher, Yellow Jacket, Confidence, Challenge Consolidated, Consolidated Imperial, Alpha Consolidated, Exchequer, Segregated Belcher and Mides Consolidated, Overman, Caledonia, Alta and Justice. The matter was fully discussed and the preliminaries agreed upon. The plan is to place powerful pumps at the 1,400 station of the Crown Point incline and to pump the water into the Sutro Tunnel connection and thus drain the mines down to the 2,760-foot level of the Belcher, where a valuable vein of ore is thought to exist. The expense will be apportioned among the companies above named. In a short time meetings of the boards of directors of the companies will be held to ratify the plan agreed to by their representatives this morning.

COMSTOCK TUNNEL COMPANY.—On the 22d ult. the Sutro Tunnel property was formally transferred to the Union Trust Company and the Comstock Tunnel Company, of New York, and the Receiver, S. C. Johns, appointed pending the McCalmont mortgage foreclosure suit, was discharged. Col. C. C. Thomas, the present Superintendent, was re-elected by the new company.

EXCHEQUER MINING COMPANY.—At the annual meeting of this company last week the old management was unanimously re-elected. The following are the directors and officers: C. Hirschfield, President; M. Rehfisch, Vice-President; W. S. Hobart, M. Jaffe, and C. F. Smythe. C. E. Ellert was appointed Secretary and A. C. Hamilton Superintendent.

LADY BRYAN.—The suit of injunction filed by Governor Stevenson, owner of this mine, restraining industrious miners from developing Flowery district locations within the boundaries of the 500 acres of mineral land claimed by the governor as included in the patented lines of the Lady Bryan, has resulted in a complete suspension of operations in that district. The suit was not entered, says the Virginia City *Chronicle*, until Messrs. Sheppard and Lees developed a body of high-grade ore in the Adriatic, and probably would never have been

entered had no important discovery been made. It is claimed by the enjoined miners that the Lady Bryan patent was fraudulently obtained through neglect of the applicants to comply with the law requiring the posting of notices of application at the linear boundaries of the ground and advertising the same for sixty days.

NEW MEXICO.

SANTA FE COUNTY.

NEW MEXICO MINING COMPANY.—In the District Court at Santa Fe, on the 22d ult., Judge Whiteman handed down a decision in the case of C. H. Gildersleeve, of Santa Fe, vs. this company, denying the complainant's application for rehearing. The case involves a one-fourth interest in Ortiz mine grant in the South Santa Fe County. The case has been pending in one form or another for twenty years. The suit has been bitterly contested and nearly a year ago Judge Reeves, of Texas, then on the bench here, rendered a decree in favor of the company. It was this decree that Gildersleeve sought to reverse by asking a rehearing on the ground that the court erred in admitting certain testimony by Stephen B. Elkins, by deciding that the will of J. F. Otis and Marguita Montoya was valid when Gildersleeve alleged it was a forgery, and by holding that complainant's cause was barred by the statute of limitations. The case will go to the Territorial Supreme Court.

NEW YORK.

ORANGE COUNTY.

Mr. Chas. N. Mazza, of New York City, while prospecting in this county recently for slate for a New York company, discovered a vien of hone or petrified wood running through a blue-stone quarry near Newburg. The find is said to be an unusually good quality of hone, which is valuable for marble cutters' uses, for sharpening too's, and in lithographing, and a New York company, it is reported, will be organized to develop the property and put the product on the New York market.

NORTH CAROLINA.

HOWIE.—This mine, owned by Boston capitalists, and of which Capt. E. B. Witherell is superintendent, says the North Carolina *Herald*, has been worked for the past two years by sinking and driving on the reef or belt of chloritic slates until they have attained the depth in their main shaft of 350 feet, with other shafts on the trend of reef. This has given them stoping ground for an output of over 100 tons per day. The ore is slate with seams and patches of quartz, carrying free gold and sulphide of iron. The richest part of the ore body is near the 300. This ancient machinery was on the ground at the time this company commenced work.

OREGON.

[From our Special Correspondent.]

BAKER COUNTY.

EUREKA AND EXCELSIOR MINING COMPANY.—This company owns two full claims located on Cracker Creek, about 40 miles from Baker. Some 2,000 feet of tunnels and upraises have been made upon the property, and large bodies of ore are now awaiting extraction. This ore is white quartz carrying microscopic grains of iron pyrite and mispickle, and is said to run $25 to $30 per ton in gold, with only one or two ounces of silver. The gold is not free, and the company (a St. Louis organization) at once encountered a difficulty in extracting the values from the ore. They then employed Mr. Oscar Szontagh, a Hungarian metallurgist, who had spent some time on the Pacific coast. He conducted a series of experiments at the St. Louis Testing and Sampling Works, as a result of which a 20-stamp dry crushing, roasting, chloridizing and amalgamating silver mill was ordered from Fraser & Chalmers, of Chicago. The mill contains rotary dryers, White & Howell furnace, stamps, pans and settlers and is in all respects a duplicate (only smaller) of the Granite mountain and Bimetallic mills, erected by the same firm. Mr. Szontagh in his report to the company is said to have stated that by giving the ore a dead roast, without salt or adding only a little at the end of the roast, and amalgamating in pans, he could save over 80 per cent. of the gold. The mill building is all inclosed and the machinery is being rapidly put in place. It is expected that everything will be ready for a start about the first of December. While the process is fully indorsed by Mr. Szontagh, many first-class mining men doubt its success. All hope for good results, as it would solve the vexed question of treatment of the base ores in which Baker County abounds.

PENNSYLVANIA.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to October 26th, were as follows:

	1889. Gals.	1888. Gals.
From Boston	4,017,675	3,589,032
Philadelphia	128,760,497	112,757,593
Baltimore	6,158,832	6,516,165
Perth Amboy	13,847,575	18,915,641
New York	371,144,723	299,015,921
Total exports	523,9.9,302	440,795,352

COAL.

It is reported that Mr. J. A. Niccolls, representing several large capitalists, has secured options for coal lands near Masontown, Fayette County, and will probably purchase about 2,000 acres. It is said that the price agreed upon was $50 per acre. The purchasers, it is said, do not propose to develop the territory, but will hold it as an investment.

DELAWARE AND HUSDON CANAL COMPANY.—No. 2 colliery, of this company, at Plymouth, has resumed work. This is one of the collieries affected by the "cave-in" five weeks ago.

UTAH.

HONERINE MINING COMPANY.—We condense the following from a press dispatch: "There is a decided embarrassment in the affairs of this company. The auditors, Messrs. Howe and Charles Keveney, have repeatedly, during the past two months, requested the books from Treasurer Murray, but it is said they have been stoutly refused their right to investigate the standing of the company. Keveney, as a last resort, recently appealed to one of the heaviest stockholders of the company, Wilson W. Fay, stock broker. At a meeting of the stockholders of the company, at Portland, Me., some time ago, Mr. Fay was instrumental in the appointment of a committee to investigate the affairs of the company." To a reporter Mr. Fay said: "I have decided that no longer shall certain men, holding the books of the company, refuse to place them in the hands of Mr. Keveney, the auditor. I, as a holder of 40,000 shares of stock, demand that the report of a certain significant scheme be proved true or fase. Many believe there is trouble."

A correspondent of the ENGINEERING AND MINING JOURNAL, in regard to the above, writes as follows: "The accounts of the company had not been audited, it is stated, for the past three years. The auditors asked for the books and vouchers covering that period, which the new treasurer refused to give them, on the ground that they were not authorized to audit back of the past year. He was willing to have his own book examined for the year, but would not consent to any examination of his predecessor's doings. The company claimed the right to do so, and the refusal has led to all sorts of rumors regarding it. It is argued that if everything is right, why object to having an examination covering the period since the books were last audited, and the refusal implies that there is something which is kept back to cover irregularities on the part of the old officers. Mr. Fay holds a large amount of stock, on which he has loaned money and he naturally desires to know how the company stands, if his security has been properly issued and what its value is.

VERMONT.

George W. Perry of Rutland, the State geologist, has submitted his annual report of the mineral industries of the State, including as the principal ones, marble, granite, slate, lime, brick and soapstone. There are forty marble firms with a capital of $5,805,400 in all, and their output is 3,863,500 cubic feet, valued at $2,497,128. Nineteen concerns are engaged in quarrying slate with a combined capital of $607,000 and an output of 1,842,218 cubic square feet of mill stock, valued at $483,113. There are forty-three granite firms, with a capital of $555,000, a production of 364,961 cubic feet, valued at $771,727. Eighteen concerns have $278,950 invested in the production of lime. Their output was 523,725 barrels, valued at $425,924. Ten firms are manufacturing brick, producing 5,245 millions, valued at $31,959,000. There are only four soapstone firms, whose output has been 3,020 tons, valued at $66,000. The aggregate statistics of these six industries are as follows: Capital, $7,330,710; largest number of men employed, 5,304; wages and salaries, $1,851,955, value of output, $4,275,851. The extensive copper works at Ely have been set in operation with a good outlook. A considerable quantity of kaolin and talc has also been mined. The manganese and iron mine in South Wallingford was largely developed. Parties continue to spend time and money prospecting for gold and silver; but as yet no paying mines have been opened.

VIRGINIA.

VIRGINIA DEVELOPMENT COMPANY.—This company, with a capital stock of $5,000,000, has been organized at Philadelphia, Pa., and will succeed the Virginia Steel Company, of Roanoke, with R. S. Brock as president; Clarence M. Clarke, vice-president and treasurer, and E. J. Collins, secretary, all of Philadelphia. The company has bought out the Southwest Virginia Improvement Company, which owned large areas of coal lands; the Rorer Iron Company, which owned 3,000 acres of iron ore lands; the Clark Summit mines, in Wythe County, and the Allison mines, in Pulaski County. The properties are to be developed on a more extensive scale.

WEST VIRGINIA.

Third Vice-President C. K. Lord, of the Baltimore & Ohio, has returned from a tour of the western lines of the company. He made trip with ex-Senator Camden, president of the Upper Monongahela River road; Senator Gorman, E. W. Clark, of Philadelphia, and Joseph D. Weeks and C. Donnelly, of Pittsburg, over the Monongahela road as far as finished. It will run from Fairmont to Clarksburg, Va., intersecting the Baltimore & Ohio at both points. The distance is 35 miles, 16 of which, beginning from Fairmont, are completed, and grading is being done on the other end. The road runs through rich coal regions in Western Virginia. The vein is about 11 feet deep and extends over a large area. The object of the trip was to show the Baltimore & Ohio people the resources of the country, with a view of getting them to furnish rolling stock at least for the present.

PLEASANTS COUNTY.

The latest oil developments are at Eureka, in Pleasants County, about 60 miles below Wheeling. Operations have been going on there for some weeks by Pennsylvania parties, it is said, and half a dozen wells, yielding from 10 to 35 barrels a day, have been doing all the producing. Recently however, the bit in a new well went to the sand and the oil spurted. All last week it produced, it is stated, 400 barrels a day. The scene of these operations is thirty to forty miles west of the Marion County field, where the excitement has not yet subsided. The product is piped to Parkersburg.

FOREIGN MINING NEWS.

CENTRAL AMERICA.

NICARAGUA.

Great enthusiasm prevails over a new gold field which has been discovered along the banks of the Principulka River, at a distance of 170 miles from San Juan del Norte. The field covers an area of several square miles, and extends some miles into the virgin forest. A company, with a capital of $30,000, is being formed in Managua to carry on operations in the new gold field. A police force has been sent thither to maintain order.

SOUTH AFRICA.

ASBESTOS DISCOVERY.—A company called the Griqualand West Copper and Mineral Syndicate has discovered on its property, a farm of between 60,000 and 70,000 acres, an eruptive dyke, running for miles and of great thickness, containing a network of veins of asbestos, said to be the richest and the finest that any one has ever seen.

MEETINGS.

Carbonate Hill Mining Company, 111 Broadway New York City, November 7th, at 1 P. M.

Central Mining Company, 76 Wall street, New York City, November 14th, at 12 o'clock noon.

Imperial Paint and Oil Company, 109 North Second street, St. Louis, Mo., November 12th at P. M.

South Jordan Canal Company, Salt Lake Utah, October 28th, at 11 A. M.

DIVIDENDS.

Calumet & Hecla Mining Company, of Michigan, dividend of five dollars per share, aggregating $500,000, payable November 14th.

Colorado Fuel Company, of Denver, Col., coupons falling due November 1st, 1889, will be paid on presentation at the Atlantic Trust Company, 30 William street, New York.

Daly Mining Company, Mills Building, New York City, dividend of twenty-five cents per share, aggregating $37,500, payable October 31st.

Oregon Improvement Company, Mills Building, New York City, dividend of one per cent. on the common stock, payable November 1st. Transfer books close October 21st and reopen November 2d.

Ontario Silver Mining Company, Mills Building, New York City, dividend of fifty cents per share, payable October 31st.

ASSESSMENTS

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of Sale.	Amn't per share.
Alliance, Utah		Sept. 11	Oct. 15	Nov. 5	.10
Anna, Dak	4	Oct. 10	Nov. 15	Dec. 5	.002½
Apex, Utah		Sept. 16	Oct. 21	Nov. 11	.05
Atlas, Dak		Oct. 3	Nov 11	Dec. 15	.000½
Belcher	38	Oct. 17	Nov. 20	Dec. 11	.50
Best & Belcher, Cal.	44	Sept. 11	Oct. 16	Nov. 6	.25
Comstock & Belfast, Dak	5	Oct. 7	Nov. 8	Nov. 25	.001
Chicago Mill. & Mg. Co., Cal	2	Sept. 13	Oct. 18	Nov. 4	.15
Crown Point, Cal	52	Sept. 18	Oct. 21	Nov. 11	.50
Florence, Dak	4	Sept. 21	Oct. 21	Nov. 5	.002½
Grand Prize, Nev	22	Sept. 24	Oct. 28	Nov. 19	.30
Grey Eagle, Dak	2	Sept. 10	Nov. 9	Nov. 30	.00½
Golden Prize, Cal	3	Sept. 21	Oct. 26	Nov. 16	.25
Goodenough, S. Dak	4	Oct. 25	Nov. 25	Dec. 11	.002
Gould & Curry, Nev	63	Oct. 15	Nov. 18	Dec. 11	.30
Grand Prize, Nev	22	Sept. 24	Oct. 28	Nov. 19	.30
Hailstorm, Dak	2	Oct 22	Nov. 22	Dec 12	.001½
Hartery Cons., Cal.	1	Sept. 17	Oct. 19	Nov. 5	.05
Hartford, Dak	1	Sept. 26	Oct. 30	Nov. 16	.001
Livermore, Cal	1	Sept. 18	Oct. 19	Nov. 6	.50
Lockport, Dak	4	Sept. 27	Oct. 28	Nov. 12	.002
Locomotive	5	Oct. 17	Nov. 25	Dec. 17	.05
McDonnell, Dak	3	Oct. 15	Nov. 20	Dec. 10	.001
Monitor, Dak	3	Oct. 19	Nov. 26	Dec. 14	.001½
New La Plata, Dak.	3	Sept. 19	Oct. 21	Nov. 5	.001
North Belle Isle	16	Sept. 18	Oct. 22	Nov. 13	.20
N. Bonanza	9	Sept. 17	Oct. 18	Nov. 14	.10
Peer, Ariz	8	Sept. 4	Oct. 10	Nov. 5	.10
Peerless	13	Oct. 11	Nov. 11	Nov. 19	.10
Potosi, Cal	33	Sept. 18	Oct. 22	Nov. 12	.50
Rialto, S. Dak	2	Oct. 21	Nov. 8	Nov. 23	.001½
Seg. Belcher & Mides, Nev	4	Oct. 7	Nov. 8	Nov. 29	.25
Sierra Nevada, Nev.	96	Oct. 5	Nov. 7	Nov. 27	.50
Silver Hill	25	Sept. 27	Oct. 31	Nov. 21	.20
Tuscarora	2	Oct. 12	Nov. 15	Dec. 5	.10
Union Con., Nev	39	Oct. 8	Nov. 13	Dec. 4	.25
Victor, Utah		Oct. 14	Nov 14	Nov. 30	.10
Vine Spring, Cal	1	Oct. 10	Nov. 18	Dec. 9	.15
W. Y. O. D., Cal	4	Sept. 17	Oct. 19	Nov. 4	.20
Young America, Dak	1	Oct. 5	Oct. 29	Nov. 30	.001

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, St. Louis, Pittsburg, Birmingham, Ala.; London and Paris, see pages 401 and 402.]

New York.

NEW YORK, Friday Evening, November 1st.

On the whole the week in the mining share market has been one of the most encouraging of the year. The aggregate transactions have not been materially increased according to the Exchange record, but this record is not always a fair criterion of the tone of the market. Instead of the wholesale distribution of such shares as Shoshone and Brunswick at 2c. and 3c. each, which has hitherto constituted a large part of the dealings, this week there has been a general, and, in some cases, a strong demand for respectable stocks, and there has been a larger actual movement of securities than at any other time for some months past.

Horn silver has been the feature of the market, and the demand for the stock has exercised a strengthening effect upon a number of other shares. Under liberal buying the price has been from $1.45 to $1.75, closing at $1.70 bid to-day with total sales of the week 5,220 shares.

Leadville Consolidated has been the next in importance and interest. Traders have apparently begun to believe that this stock is selling relatively lower than others of its class. For some time past a small lot has been obtainable at 10c. per share, but little or no inquiry was manifest until Wednesday, when the 50 shares alluded to changed hands at 10c. Since then several thousand shares have been sold, and the price has advanced to 12c., closing at that figure to-day. Summarizing the arguments advanced by the traders in the stock, we find that on one hand it is pointed out that during the past year the mine has paid off an indebtedness of about $7,000. and has also accumulated a cash surplus of about the same amount; that the mine is now more than making expenses each month; that in the past it has paid over $400,000 in dividends; that the superintendent of the Wolftone believes the strike made recently in his property is a continuation of the Leadville ore body; and, finally, that the stock is selling much lower than is that of any other mine on the list which is yielding a like profit and has a similarly honest management.

On the other hand, it is argued that while the mine is making a small profit, there is apparently little prospect of any immediate dividend, and that the property has been given up by several superintendents as exhausted, all of which is true. For the purpose of securing official information, we have ascertained from Mr. C. A. Cameron, the secretary of the company, that the Leadville Consolidated had, on October 1st, a cash balance of $6,547.63; that the mine is under lease to Messrs. Estey, Mudd & Burnand, of Leadville, on an eighteen months' contract, which expires next July. The amount received from the ore during September was $2,500, of which the company received 30 per cent. The company also has authorized its superintendent to sell some of its machinery at Leadville, at present unused and unnecessary to the operation of the mine, which is valued at about $8,000. It is understood that negotiations are now pending for this purchase, and, it is thought, will probably be shortly consumated, in which case the company's surplus should be materially increased. In regard to future dividends, if the mine continues to yield a profit, Secretary Cameron and other directors who were seen, stated that the policy of the company is a conservative one, and that they would probably endeavor to secure a reserve fund of considerable amount before making any returns to the stockholders. Another Colorado share which has been in demand is Little Chief, sales being made at 35@36c. Robinson Consoli- at 38c. Breece, 15@13c. Our Leadville correspondent last week reported an increased demand for iron fluxing ores, of which this company has a large supply, and shareholders are hoping that before long they may be able to resume active operations upon their property. We have received several inquiries concerning the prospects of the Chrysolite Mining Company. In our mining news columns a circular which has been recently issued to the stockholders, and which explains the exact situation of the company, will be found. It is shown that the cash surplus of the company is still decreasing and that it now amounts to about $18,000. There is nothing doing in Ward Consolidated. The opinion is held on the floor of the exchange that the manipulation of the stock for a number of months after its advent here was simply for the purpose of distributing it among outsiders, and it is now believed that as this has been fairly well accomplished those who were formerly interested in making it active have now no occasion to operate in it.

Supporters of the many silver mining shares on the list are much encouraged at the advance in the price of silver, which should materially increase the profits of many of our mines including many Colorado and Utah shares as well as the Comstocks.

The San Francisco market toward the close has been slightly higher. Consolidated California & Virginia has advanced from $5.50@$6.87½, closing at $6.75 to-day. Among the other sales of the Comstocks shares were Belcher at $2.60; Crown Point, $2.95; Gould & Curry, 5c.; Ophir active and advancing at $4.35@$5; Sierra Nevada, $1.15@$2.20; Yellow Jacket, $3.35; Utah, 85c.; Union Consolidated, $2.95; Scorpion 30c.; Potosi, $2.30; Oriental & Miller, 5c.@4c.; Occidental, $1.10@$1.40; Mexican, $3.75@$4.30; Julia, 30c; Exchequer, 60c.@65c.; Bullion, 65c.@70c.; Best & Belcher, $3.25; Chollar, $2.10; Alta, $2.30@$2.35. The Virginia City papers have lately printed some very favorable statements concerning the Alta property. They predict dividends in the near future.

Mt. Diablo, on which a dividend has been declared, as announced last week, sold at $2.40. As will be seen by reference to our mining news column, plans are being perfected for the drainage of the lower levels of the Gold Hill Mines on the Comstock lode. This is an important step toward deep mining, and stockholders, both here and in San Francisco, believe that such work would not be fruitless. Its resumption, it is thought, would improve the stock market.

The demand for Sutro Tunnel old stock, which was so large at one time last week, has now apparently subsided, but quotations for the old shares have not weakened from 8@9c. Trust certificates are again slightly lower at 55c.

Eureka Consolidated sold on Wednesday at $4. A full report of the proceedings of the annual meeting held in San Francisco last week will be found in our mining news column. The net surplus is larger than was expected. The latest advices from the superintendent received in this city concerning the work in the virgin ground of the eighth level of the Lawton shaft continue to report favorable indications. Stockholders are hoping that an ore-body may be developed in this ground.

Among the Tuscarora shares there have been sales of North Belle Isle at 90c.@$1.00; Commonwealth, $3.

Barcelona sold at 25c. Quicksilver Common sold at $6.

The feature of the trading in the Bodie shares has been the decline in Standard Consolidated, which has sold as low as 40c. during the week, a decline of about 35c. from the quotations of a fortnight ago. The break has been caused by a considerable amount of stock being pressed upon the market. Bodie has been sold at 60c.@90c., and Bulwer at 25c.

Brunswick continues to be passed around at 2c.

No sales of Plymouth Consolidated are reported.

Astoria has been steady at 20c.

Caledonia has been the most active of the Dakota shares. In the early part of the week there was a good deal of pressure to effect sales, and prices declined from $2.58 to $2.25. Latterly, however, the parties to whom the previous selling has been attributed seem to have been recovering the stock they have sold, and under liberal buying the price has been advanced to $2.45, closing at $2.35 bid, $2.75 asked, to-day.

No sales of Deadwood or Iron Hill are reported. Homestake sold at $9.50.

Phœnix, of Arizona, has fluctuated from 62c. to 56c. The officers of the company state that the mill will probably be started on ore from the mine shortly.

There has been a quiet but strong demand for El Cristo during the last two days, and the price has been advanced from 85c. last Saturday to $1.10 to-day. It is given out by "insiders," with the same confidential air that characterizes all the statements of the supporters of this stock, that the mine is doing much better than formerly, and that bullion shipments are being made steadily, all of which is thought by many to be simply preparatory to another flurry in the stock; but as so large a number of shares are held by one party, and as the manipulation of its price is so easy, speculators hesitate to take a hand in the operations.

Among the miscellaneous dealings are Rappahannock at 5c. to 6c., Mutual and Mining Smelting at $1.45@$1.50, United Copper at $1.15@$1.20, and Alice at 90c. Silver King declined from 50c. to 30c. San Sebastian sold at 30c. Kossuth at 14c.

We understand that a protest has recently been made to the board of directors of the exchange against striking off some half dozen mining securities from the list. This protest was referred to the committee on mining securities, and the committee through its chairman, Mr. John A. MacPherson, very forcibly replies to the protest that no securities were stricken off that were not known to have irretrievably lost their property, and the committee believes that such action is clearly in the line of honest dealing with the investing public, and will redound to the credit of the exchange. This protest and its reply scarcely calls for any comment on our part, as we have time and time again pointed out that the exchange in retaining on its list many notorious securities of absolutely no value has not only injured its own credit and standing, but has proved a hindrance to the promotion of legitimate mining enterprises, and the committee instead of being censurable for its action in striking off the securities that it has, is strenuously urged to continue its work in this direction, for there are still a number of stocks on the list whose presence is objectionable.

Boston.

Oct. 31.

[From our Special Correspondent.]

We have had a strong market for copper stocks the past week, and higher prices and more activity is in order for the next few months. The strong position of copper has given encouragement to holders of copper stocks, and those who sold out during the recent depression are now eager to regain their holdings in view of the improved outlook. One of our largest copper men is reported as saying that the copper situation is the strongest he has seen in his experience; that he was never sold up so close, and was now selling this month's product for future delivery. Consumption appears to be fully equal to the production, and the situation is the most favorable for a long while. We look to see ingot copper sell at 12c., and in that case the brokers will have no occasion to find fault with the market for copper stocks; they will be wanted at much higher prices than they are selling at to-day. These remarks apply more particularly to the dividend-paying stocks; but, at the same time, we think the low-priced and speculative list will be active, and offer a large margin of profit if bought soon. The market to-day is the strongest, and at the highest prices recorded for a long time.

Calumet & Hecla has been very steady at about $220 all the week. To-day, buying orders carried it up to $223½, and we expect to see it $250 before the year closes.

Boston & Montana advanced $2 to-day, with sales at $37¾. We look to see it sell at $50.

Tamarack opened the week at $116; to-day it sold at $125¾, and fully justifies our prediction that it was one of the cheapest stocks on the list when it was selling at about $100.

Quincy is very firmly held, and could not be bought largely without considerable advance over present quotations. Small sales reported at $51 @$52½.

Franklin, Osceola and Atlantic are all good stocks to buy at present prices. Franklin sold at $10½, Osceola at $11, and Atlantic at $10. All higher than last week. There has been an active demand for Kearsarge, which has carried it up from $5 to $6½, and we think it a good purchase for a big rise.

Alouez sold at 75c.@$1.50. This is a cheap stock at these prices, and will undoubtedly pay good profits to the purchaser. National sold at 87½c.@$1.00. Santa Fe is steady at 50c.@55c., and Bonanza is 50c. bid. We look on these two stocks as affording large margins for profits in the near future.

Silver stock dull, with Dunkin selling at 70c.

3 P. M. The market was very strong this afternoon. Calumet & Hecla sold at $2.24; B. & M. at $37¾; Tamarack, $124½; Quincy, $54½; Franklin, $11; Osceola, $12; Kearsage at $6¾. Alouez in demand at $1. National & Ridge both selling at $1, and a good demand for all the low-priced stocks. This has been a very active day, sales aggregating 8,800 shares.

San Francisco.

The prospects of the more important mines of the Comstock lode as bearing upon the future of the stock market are thus summarized by the San Francisco *Daily Report:* "Great stress is being laid upon the starting of the Carson River Mills. It is true that this would mean an increased bullion product from the Comstock mines, but the question arises how much profit would there be to the companies which would ship ore to the mills for reduction. The only mines on the main lode which have any pay ore developed in sufficient quantity are the Consolidated California and Virginia, Hale & Norcross, Alta & Justice. The first named, together with the Alta & Justice, are now making a little money, the two last named not being dependent upon the Carson River. The Hale & Norcross is awaiting a chance to have a large accumulation of ore grading from $25 to $50 crushed. Some of the other mines along the lode, including the Savage, Chollar, Potosi, Yellow Jacket, Confidence, Challenge Consolidated, Crown Point and Belcher have large quantities of ore, but its grade is too low to result in anything but a loss to the companies were it shipped freely to the mills. This loss would have to be made up by assessments upon the stockholders. The proposition to drain the lower levels of the Gold Hill mines means much time and considerable expense, which must also be met by assessments. It is a heroic move, however, and one which eventually will be popular and will have a good effect upon the market, for bodies of ore are known to exist in the lower levels. The main thing which stockholders want to know is whether stock values will stand up under the assessments which must be levied. No permanent revival can reasonably be expected until some new development of ore of magnitude can be made. It will be hard upon the market if people have to wait for such a development to be made in the lower levels. The prospects on the upper levels of most of the mines east of the syenite are not encouraging. Then why not run some drifts into and through the syenite and ascertain what there is in the west country? The *Report* has long urged such a step. Several of the mines are now drifting west, but the *Report* would like to see a more general movement."

Trust Stocks.

The Cotton Oil Trust, which under the force of public opinion has been obliged to become an incorporated company under New Jersey law, has made a report from which the following extracts are given in the *Evening Post* of to-day:

"According to the president's report, the property of the company on August 31st, 1889 (the close

of the fiscal year), consisted of a majority of the capital stock of fifty-five companies, which included crude oil mills, refineries, gins, fertilizing works, soap factories and lard plants; a majority of the capital stock of eleven other companies with practically the same outfit; and a minority of the stock of four corporations doing business of the same nature. All of this business had been bought originally at a cost of $42,185,228.33 in certificates of the Trust, and $1,640,741.06 in cash.

The profits of the Trust for the year ending August 31st, 1889, had been $1,948,012.31, less expenses incurred by the stoppage of the mills in the summer, amounting to $292,228.65, leaving the net profits up to September 1st, 1889, $1,655,783.66. The accrued profits up to May 31st, 1888, had been $4,042,901.38, which made a grand total of profits up to date of $5,698,685.04, which was represented by cash and cash assets now in the possession of the Trust. The assets were as follows:

Cash $725,859.16, cash at the various properties of the trust $542,801.34, bills receivable $701,028.24, and seed oil, cake and raw material $4,585,161.81, making a total of $6,554,850.55, which was decreased by bills payable, etc., to the amount of $5,698,685.04. The aggregate business done by the trust was $24,186,140.93.

The crushing capacity of the mills was 733 tons per day."

The Cotton Oil Trust certificates have dropped from 61½ to 32¼. Investors are beginning to appreciate the beauties of holding certificates in a Trust where no information is given, and where the personal liability of certificate holders is *unlimited*. Verdicts for heavy damages for some of the acts of the Trusts will yet be entered up against innocent certificate holders, and will bring a "realizing sense" of their responsibility—Trusts must go.

PIPE LINE CERTIFICATES.

(Special Report by Messrs. WATSON & GIBSON.)

The price of oil has been higher than for four years. The constantly diminishing stock of Pennsylvania oil is having its legitimate effect upon the price. During the latter part of the week the depression in the trust stocks had some sympathetic effect on the price of oil, in making operators afraid of buying anything, but the indications are that petroleum will sell at higher prices.

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Oct. 26.....	106¼	106⅝	105⅝	105¾	462,000
28. .	106⅜	108½	105⅜	106⅜	1,043,000
29.....	107⅞	108	105½	106⅜	800,000
30.....	106½	107⅛	106¼	106⅜	261,000
31.....	107¾	108	105½	106	343,000
Nov. 1.....	106⅛	106⅝	105	105¼	219,000
Total sales in barrels.....					3,128,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Oct. 26.....	106¼	107	105	105⅞	621,000
28.....	107¼	108¾	105⅜	106¾	1,611,000
29.....	107¼	108	105⅜	106⅜	949,000
30.....	106¼	107⅛	105⅞	106¾	764,000
31.....	107½	107¾	105¾	106	685,000
Nov. 1.....	107	107	105½	106	422,000
Total sales in barrels.....					5,052,000

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Nov. 1.

Statistics.

PRODUCTION OF ANTHRACITE COAL for week ended October 26th and year from January 1st.

	1889.		1888.
Tons of 2,240 lbs.	Week.	Year.	Year.
P. & Read. R.R. Co.....	159,856	5,880,063	5,774,935
Cent. R.R. of N. J.....	141,133	4,913,962	4,676,671
L. V. R.R. Co.....	184,620	5,898,167	5,491,443
D., L. & W. R.R. Co.....	115,000	4,256,490	5,712,405
D. & H. Canal Co.....	76,499	3,112,325	3,664,937
Penna. R.R.	60,707	2,628,783	3,713,989
Penna. Coal Co.....	33,698	1,081,331	1,398,754
N. Y., L. E. & W.....	15,065	816,074	735,551
Total.....	786,578	28,564,095	31,231,655
Decrease.....	.....	2,667,560	.....

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent. of the whole production.

These figures are subject to corrections for duplications.

Production for corresponding period :

1884.....	25,617,681	1886.....	26,062,862
1885.....	25,316,081	1887.....	28,047,072

PRODUCTION OF BITUMINOUS COAL for week ended October 26th, and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS

	1889.		1888.
Tons of 2,240 lbs.	Week.	Year.	Year.
Phila. & Erie R.R.....	2,344	67,982	52,594
Cumberland, Md.....	66,054	2,489,451	2,946,815
Barclay, Pa.....	3,025	96,764	136,691
Broad Top, Pa.....	9,567	276,052	294,058
Clearfield, Pa.....	63,063	293,659	2,755,290
Allegheny, Pa.....	19,078	655,067	643,459
Beach Creek, Pa.....	37,697	1,257,589	1,225,761
Pocahontas Flat Top.....	34,427	1,401,288	1,131,889
Kanawha, W. Va.....	*37,150	1,481,990	1,314,028
Total.....	269.405	7,919,842	10,500,585

* Week ending October 21.

WESTERN SHIPMENTS.

Pittsburg, Pa.....	17,754	533,663	596,627
Westmoreland, Pa.....	35,801	1,224,552	1,262,473
Monongahela, Pa.....	5,959	322,739	329,929
Total.....	59,514	2,080,954	2,189,029
Grand total.....	328,919	10,000,796	12,689,614

PRODUCTION OF COKE on line of Pennsylvania R. R. or week ending October 26th, and year from January 1st, in tons of 2,000 lbs.: Week, 91,171 tons; year, 3,572,253 tons: to corresponding date in 1888, 3,269,884.

Anthracite.

The anthracite coal trade is improving somewhat, as was to be expected at this season of the year, and though it does not appear to be brisk and is disappointing to many, no less than about 3,750,000 tons of coal were moved during the month of October.

The output of anthracite during that month, it was announced, was to be limited to 3,000,000 tons, and allowing the usual percentage for those who never keep their promises it was supposed the shipments from the mines would not exceed 3,250,000 tons, while in reality it was about 3,750,000 tons. The stocks of coal at tidewater shipping ports remain without much change so that the output practically represents deliveries.

The sales agents held a meeting early in the week, and it was unanimously decided that circular prices must be firmly adhered to, and it was promised that instructions would be given to all the subordinates that *absolutely* no orders were to be taken except at September circular prices which were for free burning coals: $3.90 for Steamer and Broken; $4.15 for Egg and Chestnut, and $4.40 for Stove coal, f.o.b., New York shipping port. This resolution recalls the fact that these prices were made several months ago and appear to have been forgotten by the sales agents until they were called up at this meeting. We trust they will now be adhered to. At the same time outside operators are selling at from $4 to $4.25, $4.15 for stove being considered a pretty fair price. They have not taken the pledge like the representatives of the large companies and are still doing business at the old stands.

The season is now so far advanced that it should be quite possible to command circular prices, and it would be easy to do so were production curtailed. This seems to be an extremely difficult matter to arrange, and all the good resolutions concerning prices have been again and again expressed concerning production; however, we do not wish to discourage the gentlemen. The anthracite trade should be conducted in a manner that would inspire confidence on the part of buyers, and, no doubt, after a few more years of study and experience, the managers of the great companies will find out how to accomplish this.

Vessels are somewhat more abundant, but are still rather scarce, but there is not the same lack of ability to fill orders that we notice in the soft coal trade. Any one can get coal that wants it, and anyone can get almost any coal at pretty reasonable figures.

The decision in the case of Coxe Brothers & Co. against the Lehigh Valley Railroad is expected before long. It is supposed that it will be given about the end of this month, when the coal business for the year practically ends and will not be disturbed by the decision. The impression has gained ground, and is now almost universal, that the decision will be in favor of Coxe Brothers & Co. This has been our own belief throughout, and we see no reason to change it.

The effect upon the coal trade will be very important, and it will certainly have an immense bearing upon the values of railroad stocks. It will no doubt secure for anthracite coal much lower rates to tidewater than have heretofore been obtained. This will react on the bituminous trade, for it will enable anthracite to compete more fully with that article for manufacturing purposes. At the same time, should the ruling obtain that all sizes of anthracite must pay the same rate of freight, and we cannot see how this can be avoided if bituminous and anthracite have to pay practically the same rates, then the small coals, such as pea and buckwheat, would be practically ruled out, except such as is carried by the railroad companies from their own mines. No individual operator could afford to pay as much on pea coal as on stove, and yet this is very likely to be the decision which will govern the coal trade of the future.

The Inter-state Commerce Commission, on the 13th ult., announced its decision, in an opinion by Commissioner Morrison, in the case of James & Abott against the East Tennessee, Virginia and Georgia Railroad Company and others.

This is a complaint of the transportation charges on lumber carried from Johnston City, Tenn., to Boston, Mass. The rate of which complaint is made is 36 cents per 100 pounds of lumber in the carload for a distance of 917 miles, though from the more distant point of Atlanta, Ga., 1,640 miles, a lower rate of 34 cents is charged, which is alleged to be in violation of the fourth section of the act to regulate commerce. From Macon, Ga., to Boston the freight charge is the same as from Johnston City, 917 miles, the shorter distance over the same line.

The commission holds that combined rail an water competition at a longer distance point does not justify a greater charge for the shorter distance, while the shorter distance rate is maintained by the carrier at points where the competition is of greater force and more controlling than at the longer distance points; such greater charge is not justified by the fact that local rates have been first paid on lumber to the longer distance points, nor by the fact that the freight is shipped in cars from the longer distance points which brought machinery to those points, and for which profitable return loads were not always to be had; nor by a difference in the bulk and values of the lumber when published rate sheets put the lumber in the same class and at the same rate. While distance is not always a controlling element in determining what is a reasonable rate, there is ordinarily no better measure of railroad service in carrying goods than the distance they are carried; and when the rate of freight charges over one line in sending freight carried from a neighboring territory to the same market is considerably greater than over other lines for distances as long, such greater rate is held to be excessive and should be reduced. The rate on lumber from Johnston City to Boston should not exceed 33 cents per 100 pounds.

This important decision seems to forecast the decision in the great Coxe suit against the Lehigh Valley Railroad, which has been anxiously looked for these many months. It seems to indicate that the decision will go against the railroad, for if all kinds of lumber that are put in the same class and must be carried at the same rate, so all classes of coal, which on most roads are put in a single class, must on other roads also be carried at the same price, and one road may not charge more than other roads do from neighboring territory to the same market for equal distances. This decision may lead to a single classification for coal, whatever its character, soft or hard, or the size of its pieces, whether lump, stove or pea coal.

Bituminous.

No new features of interest have been developed in the soft coal trade this week. On account of the continued difficulty in securing adequate transportation facilities, cars still being scarce and vessels not as plentiful as desired, coal is not more easily obtainable than it has been. The scarcity is very general, even the Norfolk & Western and the Chesapeake & Ohio shippers, who have had heretofore altogether too much available coal for the comfort of the remainder of the trade, are now said to be unable to fill all their orders for prompt delivery. The Cumberland and the Clearfield producers are similarly situated. With matters as they are, no one can well quote less than the combination rates, and as the difficulty is one of transportation and not of price, even the pool rates at times are almost nominal. As soon as more coal can be brought to tidewater, of course the usual prices will prevail.

The discussion of plans for another "iron-clad" combination continue, but no material progress has yet been achieved.

The one fact that is steadily becoming more prominent is that next season and henceforth West Virginia coals are to be a more important factor in the trade than in the past. During the year the Pocahontas shippers have shown at what figures they can send coal to tidewater despite the enormous distance (about 380 miles to Newport News) to be traversed. Next year not only the Hawk's Nest property, on the C. & O. R. R. (400 miles from Newport News and light grades), with its ability to mine coal very cheaply, will be in the field by extension of several railway systems, Coal fields all over the State will be placed in a position to market their product. In this conection we condense the following from press dispatches received during the week.

The Cumberland Valley Railroad, which runs from Harrisburg to Winchester, Va., will extend its line from Fort Loudon, Franklin County, to the Pennsylvania Railroad, in Huntington County, through the coal fields.

A dispatch from Masontown, Pa., says that there is quite a boom in coal land in this section, with a view of the extension of the Southwest Pennsylvania Railroad from Uniontown to the West Virginia line, which has been surveyed from Uniontown to West Virginia, via Masontown, to the Monongahela River, and then up the finest and wealthiest mineral valley in the State.

A surveying party has been organized at Danville, Va., to survey the route of the Danville & East Tennessee Railroad from this point to the coal fields of Southwest Virginia. Danville recently subscribed $150,000 to the road, and the work will be pushed vigorously.

A dispatch from Roanoke, Va., November 1st, says a deed of trust from the Norfolk and Western Railroad Company to the Mercantile Trust Company, of New York, for $45,000,000 has been filed in the clerk's office here. The purpose of the mortgage is to provide means to double track portions of the road and to build extensions, and provide additional terminal facilities. Existing mortgages will be retired.

A report from Philadelphia, Oct. 29, says: An aggressive policy has been adopted by the Lehigh Valley, and orders have been issued to increase the working force on the Schuykill & Lehigh Valle

Road, so that there are now nearly 3,000 men employed in the neighborhood of the Tremont coal fields. The engineers are confident of completing the new road before September 1st, 1890, when the busy season begins.

There are also a great many improvements under way on the coal lands recently purchased at Minersville, which the Reading was anxious to acquire, but the money was not forthcoming to take advantage of the options secured. It is expected that the new coal company will be able to enter the market as a large producer.

Andrew Langdon, of Buffalo, secured an injunction in the Supreme Court this week, restraining the officers of the Hillside Coal and Iron Company from threatening to cancel the lease of coal lands held by the Grassy Island Coal Company. Mr. Langdon holds considerable stock of the Grassy Island Coal Company, and recently attempted to sell some of it to the New York and Ontario Railroad Company. The Hillside company warned the railroad company that if they bought the stock the leases would be canceled. The railroad company then refused to buy the stock. Mr. Langdon says in his complaint that all his efforts to make the sale of the stock have proved unavailing, owing to the unlawful and malicious conspiracy between the New York, Lake Erie & Western railroad company and the defendants, to coerce him in dropping a suit for damages which he has brought against the railroad company.

Boston. Oct. 31.

[From our Special Correspondent.]

The anthracite coal market has been less active than when I last wrote. The weather is dead against the retailer, and unless there is a change the market will weaken. However, local jobbers are not inclined to borrow trouble. They are quite well satisfied that the companies are doing all they can to hold the market up by curtailing production. The action of the Tuesday meeting in not advancing prices, but in resolving to adhere more closely to present circular, is generally commended here. Notwithstanding the dullness, anthracite is firmer than it was, and it hard to buy any good coal at less than the regular 15 cents off fall circular, or, say, on a basis of $4.25 for stove. I know of an offer for a round lot of stove at a little less than $4.25, which was refused this week. Outside coal is firmer also. Good seasonable weather will bring the market through all right, but mild weather during November will tend to weaken the situation.

Bituminous coal is scarce and higher. There is no cutting now. Clearfield as well as Cumberland will bring $2.60 f.o.b. quick. A cargo of coal afloat is worth $4.25 alongside and would be readily taken up. One or two of the largest (most greedy, their competitors say) shippers are losing considerable on their delivered contracts, owing to high freights.

Freights are higher than ever. At Baltimore $1.60 is paid, and this rate is beginning to attract vessels, but shippers are still finding it hard work to get coal along. The B. & O. and C. & O. railroads continue very backward about getting coal forward. At Philadelphia freights are $1.35 strong. At New York the rates are $1.15@$1.30. Small vessels are very firm at the outside figures. Barges are also held at fancy prices. Vessel owners are apparently making a good thing, but it is true, as they say, that all craft are making very long voyages.

Retail trade is very fair, but there is no rush and all the trade are complaining about the weather.

Buffalo. Oct. 31.

(From our Special Correspondent.)

The anthracite coal men do not make public any items of interest, either in supply, demand or quotations.

The bituminous coal trade is still restricted by scarcity of supply occasioned by the lack of transportation facilities. The quotations remain stationary, however; but an advance may occur at any time.

Coke firm with moderate business doing.

The Inter-State Commerce Commission will hear in Washington, November 12th, the case of Messrs. Andrews, Langdon & Co. vs. the Delaware & Hudson Canal Company for unjust discrimination in coal freight rates.

The Buffalo Freight Committee met here last Tuesday and resolved that coal freight rates hence to Chicago should be advanced from $1.75 to $2 per gross ton after November 15th. The advance is the same as last year, but the rate is 25c. less. During the season of navigation in 1888 the railroads obtained $2, and when navigation closed the increase gave them $2.25. This year they have received only $1.75 per gross ton. This rate is from Buffalo, Black Rock, Suspension Bridge, Salamanca and Erie. The Grand Trunk Railway and Pennsylvania roads still make the $1.75 rate; the Pennsylvania rate is made lower to meet water competition, and the Grand Trunk to meet theirs.

The Common Council has granted permission to the "Erie County Natural Gas Fuel Company" to lay their pipes in certain portions of the city.

The Pennsylvania State Commission appointed to determine the feasibility of a ship canal from Lake Erie to the Ohio River were in session at Pittsburg, Pa., last week. The proposed canal will strike the Ohio River at Beaver, 30 miles below Pittsburg. Governor Beaver's idea is to make a continuous waterway from New York to New Orleans, entirely inland, by connecting the Ohio River and Lake Erie. A committee will be appointed to examine the line suggested and report at an early day.

The coal shipments by lake from this port for the past week were principally to Chicago, Milwaukee, Duluth and Superior; freights firm, with upward tendency, as the close of navigation is near at hand. The shipments from October 24th to October 30th, both days inclusive, aggregated 88,350 net tons, namely, 41,500 to Chicago, 16,500 to Milwaukee, 18,360 to Duluth, 8,370 to Superior, 1,000 to Racine, 620 to Detroit, 500 to Marquette, 150 to Pequaming, 600 to Toledo, 500 to Amherstberg, and 250 to Bay City; total for the season 1,884,160 net tons. The rates of freight were 65c. to Racine, 60c. to Chicago and Milwaukee, 30c. to Detroit, Toledo and Amherstberg, 25c. to Duluth, 25c. and on contract to Superior, on contract to Gladstone, 25c. to Bay City, 50c. to Pequaming, and 45c. to Marquette. Several vessels have already gone into winter quarters. Tonnage offered ample, however, for all requirements of the trade.

The coal charters by canal for the past week were four loads to Ilion, 90c. net ton, free on and off; one load to Oriskany, 90c. net ton, free on and off, and two loads to Syracuse, 70c. gross ton, free off only.

Pittsburg. Oct. 31.

(From our Special Correspondent.)

Coal.—Market is firm, with active consumption steadily increasing, as many of the works are now partly run by coal that formerly used natural gas. During the past 24 hours there has been a sufficient rise to send out coal. There are 14,000,000 bushels loaded, about one-half of which left on this water. The channel of the Ohio River being blockaded with obstructions of the Beaver bridge prevented further shipment. The value of the coal lost at that obstruction amounts to several thousand dollars. There is no change in cost of mining.

The nominal rates are:

PRICE OF COAL PER 100 BUSHELS = 7,600 LBS.

First pool	$4.75	Fourth pool	$3.25
Second pool	4.50	Railroad coal	5.00@5.50
Third pool	3.90		

Connellsville Coke advanced to $1.75. The scarcity of cars and motive power continues. Most of the yards have a large amount of coke stacked waiting shipment. Many are of the opinion that coke will be $2 by the 1st of January. Shipments for last week: Pittsburg and river points, 1,500 cars; points west of Pittsburg, 3,375 cars; points east of Connellsville, 1,200 cars; total, 6,125 cars, being several hundred cars less than the previous week. Some operators have stacked as high as 400 or 500 cars of coke a day for want of cars.

Freights.—Pittsburg, 70c.; Mahoning and Shenango valleys, $1.35; St. Louis, $3.65; Chicago, $2.75; Cleveland, $1.70.

FREIGHTS.

From Baltimore to: Alexandria, †85; Baltimore, †65; Boston, Mass., *1.30@*1.40; ; Charleston, 75; Com. Pt., Mass., *1.45; East Boston, *1.35; East Cambridge, *1.40; Fall River, *1.00@*1.10; Galveston, 3.25; Georgetown, †.85; Gloucester, *1.50; Lynn, *1.45; Milton, *1.40; New Bedford, *1.00@*1,10; Newburyport, *1.35@*1.40; New London, 1.25; New York, N. Y., 1.05; New York, †.90; Norfolk, .8.@.90; Portland, *1.30; Portsmouth, 1.40; Portsmouth, Va., .90; Providence, *1.00@*1.10; Richmond, Va., .70; Richmond, 1.00; Salem, Mass., 1.40 Savannah, 1.00; Washington, †.85.

From Philadelphia to: Alexandria, .85†; Baltimore, .65†; Boston, Mass., 1.30*@1.35*; Charleston, .75; East Cambridge, 1.40*; Fall River, 1.00*@1.10*; Galveston, 3.25; Georgetown, D. C., .85†; Gloucester, 1.35*; Lynn, 1.45*@1.40*; Milton, 1.40*; New Bedford, 1.00@1.10; New York, .90†; Norfolk, Va., .85; Norwalk, Conn., 90†; Portland, 1.30; Portsmouth, N. H., 1.40*; Richmond, .80@.85; Salem, 1.30; Washington, .85†.

From New York to: Bath, Me., .90*; Boston, Mass., .75*; Charlestown, .75*; East Boston, .75*; Lynn, 1.00*; New Haven, .60; Portland, .75*; Portsmouth, N. H., .85*; Quincy Point, .75*; Salem, Mass., .75*; Sangus, .80*.

* And discharging. † Alongside. ‡ And towage.

METAL MARKET.

NEW YORK, Friday Evening, Nov. 1.

Prices of silver per ounce troy.

Oct.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.	Oct.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
26	4.85½	43 3-16	*	30	4.84¾	43¼	†
28	4.85	43¼	94	31	4.84½	43⅜	94¾
29	4.85	43 5-16	94⅛	Nov 1	4.84½	43⅜	94¾

* 93⅞ to 94. † 94⅛ to 94⅝.

Indian Council bills advanced ⅛d. on this week's allotment.

The silver market has been very firm and steadily advancing, there being a good demand in the London market for bars for the English mint and Eastern shipment, with the supply limited.

United States Assay Office at New York reports total receipts of silver for the week 95,000 ounces.

Foreign Bank Statements.

The governors of the Bank of England, at their weekly meeting, made no change in its minimum rate for discount, and it remains at 5 per cent. During the week the bank gained £328,000 sterling bullion, and the proportion of its reserve to its liabilities was raised from 38·40 to 40·74 per cent., against a decline from 38·38 to 37·94 per cent. in the same week of last year, when its rate for discount was 5 per cent. Thursday, the bank gained £36,000 bullion on balance. The weekly statement of the Bank of France shows a loss of 2,950,000 francs gold and a gain of 475,000 francs silver.

Domestic and Foreign Coin.

The following are the latest market quotations for American and other coin:

	Bid.	Asked.
Trade dollars	$ .73	$ —
Mexican dollars	.75½	.76
Peruvian soles and Chilian pesos	.72	.73½
English silver	4.83	4.88
Five francs	.94	.95
Victoria sovereigns	4.84	4.88
Twenty francs	3.86	3.90
Twenty marks	4.74	4.78
Spanish doubloons	15.55	15.75
Spanish 25 pesetas	4.80	4.85
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.65
Ten guilders	3.96	4.00

Copper.—An event which has been generally expected for some time past has taken place during the past week, namely, at a meeting of the combined Lake companies held at Boston on October 31st, it was decided to advance the price of Lake copper from 11c. per pound to 11½c. Any one who has carefully watched the tendency of values and the natural causes affecting same must have seen that with the principal Lake companies sold out up to the end of November and some even up to the end of the year such action was inevitable, and it has only been a matter of surprise that such a step was not taken much earlier. The fact is, the consumption of copper just now all over the world is going on at an unprecedented rate, and had it not been for the unpolitic proceedings of the representatives of certain foreign bankers a short time since in forcing sales, there was no reason whatever in reducing the prices of Lake copper below 12c. Under the circumstances, the interested companies at their recent meeting have adopted a very conservative policy in restoring only one-half of the decline brought about by the proceedings referred to. Owing to the continued keen competition on the part of the producers, the prices of casting copper have not benefited to the same extent as the Lake sorts, but a distinctly firmer tendency is also noticeable in those brands, and we have now to quote casting sorts 10¼@10½c.; rolling sorts, 10¾@11c.

The London market for Chili bars and G. M. Bs.' which for a considerable time past has remained pretty steady at prices ranging between £42 5s. to £43 spot, and between £42 to £42 10s., three months, became somewhat excited under the influence of large speculative purchases; and on Thursday quotations suddenly advanced to £44 2s. 6d.@£44 5s. spot, and £44 7s. 6d.@£44 10s., three months. On Friday the market opened strong again at £44 10s.@£44 12s. 6d., spot, and £44 17s. 6d. @£45, three months, but closed a little easier again at £44 2s. 6d.@£44 5s., spot, and £44 10s.@£44 12s. 6d., three months.

Latest cables report refined and manufactured copper as yet unaffected by this speculative movement in Chili bars, and that Anaconda matte can still be purchased at 8s. 4½d. per unit in Liverpool, a price which, in comparison with Chili bar quotations, appear ridiculously low. It now remains to be seen whether the upward tendency (understood to have been initiated by speculators who have realized large profits by the recent great rise in iron in Great Britain) will prove to be of permanent duration.

The exports of copper from New York during the last week were as follows:

	Copper Matte.	Lbs.	
To Hamburg—			
By S. S. Italia	1,878 bags	191,021	$10,000
" " "	1,765 "	204,000	13,455
To Liverpool—			
By S. S. Herchell	213 bbls	224,961	10,000
" Helvetia	2,400 sacks	673,600	32,200
	Copper.		
By S. S. Germanic	129 bars	56,000	5,500
" City of Berlin	45 casks	56,000	6,000
By S. S. Hershell	377 pigs	112,459	11,250
To Hamburg—			
By S. S. Hammonia	212 pigs	66,796	7,000
" " "	57 bars	24,556	2,400
To Rotterdam—			
By S. S. Rotterdam	659 bars	112,142	11 800
By S. S. Glengoil	330 "	56,050	6,000
" "	90 bbls	112,500	12,500

Tin.—At the close of last week we left the London quotations £92 2s. 6d.@£92 5s. spot, and £92 12s. 6s.@£92 17s. 6d. three months, and since then a very important rise has taken place, as will be seen from the following closing quotations: Monday, 28th inst., £92 7s. 6d.@£92 12s. 6d; spot, £93@£93 2s. 6d. Tuesday, 29th inst., £94 5s.@£94 10s. spot; £94 15@£95, three months. Wednesday, 30th inst., £96@£96 5s. spot; £96 10s.@£97, three months. Thursday, 31st inst., £97@£97 5s. spot; £97 10s.@£97 15s., three months.

On Friday, Nov. 1, the market opened strong again at £98 5s. to £98 7s. 6d. spot and £98 15s. to £98 17s. 6d. three months, but the closing quotations were somewhat weaker again at £96 15s. to

£97 spot, and £97 to £97 5s. three months. The amount of business done in London has been very large, and it is evident that there are strong influences in favor of higher values. In our own market there has also been considerable excitement and a heavy business, some 600 to 800 tons having changed hands during the week. Our closing quotations are: Spot, 21.80; Nov., 21.65; Dec., 21.60; Jan., 21.50; Feb., 21.45; March, 21.40.

In spite of the higher level of values demand for consumption continues exceedingly active, and orders are coming in very freely, proving that the stocks in consumers' hands are very light.

Lead.—Owing to the excitement in copper and tin the lead market has been somewhat neglected, and transactions have been insignificant. Some small dealings are reported at 4·80 to 4·82½ spot and November, while we have heard of no business for the later months.

Messrs. Behr & Steiner, of New York, recently wrote to the Secretary of the Treasury calling in question the propriety of the department's instructions of July 17th last preventing the entry of mixed Mexican lead-silver ores and requiring the value of the lead in such ore to be estimated at the New York market price, less one cent per pound.

Acting Secretary Batcheller has informed them that said instructions were carefully considered before promulgation, and that no good reason is now perceived for changing them, the department being of opinion that Congress in legislating upon ore had reference to ores in their native state—as in the mines—and not to ores mechanically prepared and cunningly mixed for the purpose of evading duty. He says that the deduction of one cent per pound from the New York value of lead is a fair basis for determining its Mexican value.

The St. Louis Market.—Messrs. John Wahl & Co. telegraph us as follows: Lead quiet, but reasonably firm, with light sales at 3·60c.

The Chicago Market.—Messrs. Everett & Post telegraph us as follows to-day: Our market has been active during the week at and around 3·65c. Altogether some seven hundred tons have changed hands at that figure or a shade less. At the close the market is quiet but firm at 3·65c.

Spelter is in slightly improved demand, and we have to quote to-day prime Western spelter at 5·10 to 5¼. The European markets are higher again, and the latest quotations are: Ordinaries, £22 7s. 6d.; specials, £22 12s. 6d

Antimony continues strong and advancing, and we have again to raise the quotation for Hallets to 18⅛-⅝.

Quicksilver.—The market continues very quiet, and an advance of 5s. in the London market from £9 5s. to £9 10s., having no effect on the trade. We quote $48.50@$49, and for jobbing lots, 66c.

Nickel.—From 70@75c. per pound seems to be the uniform quotations for small quantities. The editorial on this metal in the last issue of the ENGINEERING AND MINING JOURNAL has attracted wide attention. While there is no doubt, as there pointed out, that nickel is destined to a much more extensive use and increased consumption, it is equally certain that the present price is purely an artificial one, and must eventually be lowered.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, November 1.

Pig Iron.—On the spot pig iron is very scarce, and many consumers who are usually well supplied at this time of the year are now in more or less urgent need of immediate supplies. A thorough canvass of the market fails to reveal any available iron of importance. Some Southern iron, which was bought a month ago, has not yet been delivered. A great deal is blocked at Norfolk and Savanah, the coastwise steamers being engaged in carrying cotton, the transportation of which is more profitable than that of iron, and consequently it has become almost impossible to get any iron from those ports for either New York or Boston consumers. Pennsylvania railroads are likewise blocked with freight, and therefore immediate deliveries are very difficult to obtain. Iron is worth whatever can be obtained for it, and realizing this, those who are fortunate enough to have a small supply on hand are asking much higher prices than the quotations now ruling for future delivery. This week, for instance, a small lot of No. 2 Foundry in store here, $18.50 per ton was asked.

In the market for forward delivery, during the week there has been absolutely no change in the situation as outlined in this column last week. For the next three months furnaces seem to be uniformly engaged for a large portion of their capacity and consumption continues. At this time last year the demand began to fall off, but if consumers have not a larger stock on hand than they are now reputed to have, and if the demand for early delivery is as urgent as it seems to be, any weakening in prices or in the market is very improbable. It is possible that some of the new Southern furnaces, such as Sheffield, Ala., for example, may have a larger supply on hand than is thought, but it is probable that the managers of these furnaces will hold all the iron that they can in anticipation of higher prices.

A fanciful tale that the Thomas Iron Company has recently sold and shiped 1,000 tons of pig iron for Liverpool delivery, has found its way into the daily press and has been received by ever credulous Wall street as an indication that "carrying coal to Newcastle" has begun in earnest, and that the United States is at last to have an outlet for its iron in British market, all of which, in view of existing circumstances, is so obviously absurd as to scarcely need contradiction here. We may say, however, upon the authority of the Thomas Iron Company, that there is absolutely no truth in this report. Some ten days ago, as we were then aware, President Clark instituted some inquiries as to the practicability of shipping iron to England on account of the present disparity of the ruling prices her e and abroad, but an investigation quickly showed that freights to the other side would be so high as to make exportation altogether out of the question. Freights to Liverpool cannot be obtained at less than 20s. per ton, while Glasgow shippers are able to reach this market at only 1s. per ton for freight, as the cotton steamers are willing to take iron as ballast on their return trip to this country.

For No. 1 foundry we may quote $17.50 to $18.50; No. 2, $16.50 to $17.50; gray forge, $16 to $16.50.

Beginning to-day as previously announced, the Thomas Iron Company will hereafter charge its customers on old contracts at the rate of $18 for No. 1 and $17 for No. 2.

Bessemer Pig.—Rail mills, particularly in the East, are hampered on account of the scarcity of Bessemer pig for early delivery. In the West prices have greatly advanced, and consumption has been unusually large, in view of which Eastern makers are cautious in naming figures for forward delivery. It is difficult to give quotations. The high prices ruling abroad prohibit importations, and rail makers are consequently obliged to draw their supplies from home sources. For 1890 delivery, $19 is quoted, but for prompt shipments, asking prices are much higher.

The Macungie furnace, in the Lehigh Valley, has been leased by the Crane Iron Company for a period of three to five years, beginning to-day, and will hereafter turn out Bessemer pig.

Scotch Pig.—The Glasgow market has been the scene of excited speculation during the week, and the prices of warrants have fluctuated considerably, closing to-day according to the latest cables at 57s. 2d. The prices ruling, however, continue to prohibit importations to the American market, and the Glasgow quotations consequently have no important bearing on the market here. For Scotch brands there is, of course, little or no inquiry, and quotations may be written nominally as follows: $26.50 for Coltness; $25.50 for Summerlee; $23 for Delmellington; $23.50 for Clyde; $25.50 for Langloan, and $25 for Shotts.

Spiegeleisen and Ferro-Manganese.—The scarcity of supplies for prompt delivery prevents business, and prices continue very firm at about $90 for ferro-manganese. A lot for December delivery was offered for $92 for 80 per cent. For forward delivery quotations are very unsettled. Spiegeleisen, 30 per cent., is quoted nominally at about $35.

Steel Rails.—Most of the mills have orders on their books for the next six months, and consequently there is no pressure to effect sales. On the other hand, during the week the inquiry has been light, and no actual business of importance, so far as can be learned, has resulted. Prices are firm at $32 at Eastern mills.

Billets, Slabs and Rods.—Inquiry is lighter than it has been, and many large consumers, it is believed, have covered their immediate wants, but as the mills continue well sold up for some time ahead, prices are firm. For both billets and nail slabs we may quote $34 to $35 nominally. Foreign wire rods are quoted at $52.50, and American mills are asking for their product $50.

Structural Iron and Steel.—The latest quotations are as follows: On wharf, bridge plate, 2·25c.; iron angles, 2·25@2·35c.; iron tees, 2·75@2·85c.; steel angles, 2·35c.; beams and channels, on wharf, 3·1c.

Steel plates on wharf: Tank and ship, 2·6c.; shell, 2·8c.; flange, 3@3·1c.; fire-box, 4@4·1c.

Iron plates on wharf: Common tank, 2·25c.; refined, 2·35@2·45c; shell, 2·5@2·6c.; flange, 3·5@3·7c.; extra flange, 3¾@4c.

Bar iron at mill is quoted at 1·7c. for common and 1·8@1·85c. for refined. Deliveries from store are quoted as follows: Common, 2c. base; refined, 2·2c. base; "Ulster," 3@3½c. base; Norway bars, 4c.; shapes, 5c., and Norway nail rods, 5½c.

Merchant Steel.—We quote as follows: Best English tool steel, 15c. net; American tool steel, 7½@10c.; special grades, 13@20c.; crucible machinery steel, 5c.; crucible spring, 3½c.; open-hearth machinery, 2½c.; open-hearth spring, 2½c.; tire steel, 2½c.

Rail Fastenings.—We quote as follows delivered: Spikes, 2·20c.; angle fish plates, 2c., and square nuts, 3c.; hex nuts, 3·25c.

Pipe and Tubes.—Rates of discount on wrought-iron pipe remain as follows: Butt welded, plain and tarred, 50 per cent. discount; galvanized, 12½ per cent. discount; lap-welded, plain and tarred, 62½ per cent. discount; galvanized, 50 per cent. discount. A discount of 57½ per cent. is allowed on boiler tubes of 2 inches and larger, and 52½ per cent. on 1¾ inches and smaller.

Cast-iron pipes remain at $25@$28, according to size.

Old Material.—Prices continue firm, and the diversity between buyers' and sellers' views as to values prevents much active business, a contributory cause being the scarcity of rails on the spot. The cost of importation is about $26 per ton for tees, and this figure may be said to represent the usual asking price. Buyers, as a rule, are unwilling to pay more than $25. No. 1 wrought scrap iron is quoted at $23 on board cars at Jersey City.

Louisville. Oct. 30.

(Special Market Report by Messrs. HALL BROS. & CO.)

There has not been as many sales during the past week, but the trades made were at full figures. Many of the larger buyers are supplied for a considerable time and are not anticipating their wants further now. Railroads have given notice of advances in freight rates, which will be added to the prices of iron, thus advancing figures to the extent of the increase in freights.

Hot Blast Foundry Irons.		
Southern Coke	No. 1	$16.00@$16.50.
" "	No. 2	15.50@ 15.75.
" "	No. 3	15.25@ 15.50.
Mahoning Valley, Lake ore mixture		19.00@ 19.50.
Southern Charcoal	No. 1	18.00@ 18.50.
" "	No. 2	17.50@ 18.00.
Missouri "	No. 1	19.00@ 19.50.
" "	No. 2	18.50@ 19.00.
Forge Irons.		
Neutral Coke		15.00@ 15.25.
Cold Short		15.00@ 15.25.
Mottled		14.00@ 14.50
Car Wheel and Malleable Irons.		
Southern (standard brands)		23.00@ 23.75.
" (other brands)		19.00@ 19.50.
Lake Superior		22.00@ 22.50.

Philadelphia. Nov. 1.

(From our Special Correspondent.)

Pig Iron.—Very little indeed can be said this week that is worth saying concerning the pig iron market. Buyers are not willing to buy and sellers are not anxious to sell. Both sides seem to be waiting for something to happen; one side says prices must and will advance; and the other side replies that prices for manufactured products do not justify covering forward requirements at any higher than present quotations. Gray Forge is strong, at $15.50@$16; No. 2 Foundry, at $16.50@$17, and No. 1, at $17.50@$18.50. Furnace agents predict some interesting developments during the next two weeks.

Foreign Iron.—A good deal of talking and some cabling has been going on concerning business under consideration, but the actual business transacted is small. Ferro-manganese is quoted at $88@$90 for 80 per cent.

Blooms.—Very little new business can be heard of this week, and sellers' and buyers' views as to prices do not accord. Certainly, more money is asked than buyers are inclined to pay; but as makers are not in need of business, they show but little inclination to name a lower price. The quotation of $35 was given to-day on nail slabs and the same figure for tank. Shell is quoted at $38@$39 and flange at $41@$42. There is no change in anthracite, charcoal or scrap bloom quotations.

Muck Bars.—Buyers who want muck bars within any reasonable time are not able to obtain better quotations than $29@$29.50.

Merchant Iron.—Recent buyers of refined iron have paid 1·95c., and small buyers for immediate delivery have paid 2 cents. Mill men are unwilling to sell refined under 1·90c., and think that that will be the bottom price hereafter. There is less difference between refined and medium than usual, and the activity in common iron has brought it up within closer range.

Nails.—The talk to-day is that a further advance will be announced; but there are several mills still booking business at the prices of two weeks ago. Store quotations are $2.20 for iron and $2.35@$2.40 with steel, with the customary concessions for large lots.

Skelp Iron.—Skelp iron is quoted at 1·80 for grooved, and 2·10 for sheared, and orders are keeping mills running full time.

Wrought Iron Pipe.—The crowded condition of mills continues, and prices, particularly on boiler tubes, are likely to move up a little. All mills are filled up.

Sheet Iron.—The advance on small lots heretofore noted has become general, and all quotations are now made slightly higher. Some large orders have been received from outside buyers, and both soft steel sheets and best refined rule very firm.

Plate Iron.—Several good-sized orders have been booked since Monday, most of them at the the 2·20 rate for ordinary tank; shell, 2·60; flange, 3·25; fire-box, 3·80; steel plate, 2·50; but slight concessions are occasionally heard of on large orders that are always dropping in.

Structural Iron.—This week's orders aggregate about 2,000 tons for optional delivery during the winter. Quotations are 2·30 on bridge plate, 2·25 on angles, and 2·80 on tees, with a shading of about $2 per ton sometimes. Beams and channels are strong at 3·10.

Steel Rails.—Brokers who have been working around among the rail mills for the acceptance of

small orders for early delivery, have been disappointed in having to wait; they find quotations $32.50@$33.50.

Old Rails.—Old rails have been marked up 50c., and offers were made yesterday and to-day at $26@26.50.

Scrap Iron.—The scrap iron market is active for everything, and there are no stocks. Choice has been advanced 50c., and some holders offer to furnish it at $24.

Pittsburg. Oct. 31.

[From our Special Correspondent.]

Raw Iron.—The market at the present time is certainly a difficult one to handle with any kind of satisfaction, there being such a wide difference of opinion among leading dealers. Some say the top has been reached, and produce arguments to maintain their views; the other side admit that though there is a falling off in the volume of business, it is all done for a purpose; that, in a very short time, there will be such an increase in the demand for raw iron that prices will show a further advance. We give all the facts obtainable. The reader can form his own opinion. There are dealers who are selling right along all the iron they can procure at present figures. There are others who are altogether indifferent about making contracts at present prices, contending that consumption at this time is in excess of production; that they will not have long to wait. Reports from various points represent pig iron scarce; that furnaces have sold all the iron they can make the balance of the year. On the 1st of November coke will be advanced 25 cents. This will add to the cost 37½ cents per ton. Of course, furnacemen will add this to the price. Within a short time the advance of coke has reached 75 cents, making each ton of raw iron cost the maker $1.12½ per ton more than before, so under these circumstances the prospect of cheaper iron is not very flattering. In a market like the present, it is difficult to indicate any particular course as the proper one. In a general way the word conservative would meet the case, but it is no easy matter to apply that term to individual cases in times like these. In regard to next year's deliveries, that point will be reached by many of the companies during the coming month, so that a price for deliveries during the first part of 1890 must soon be determined upon. The situation is described in the following transactions.

Coal and Coke Smelted Lake Ore.

3,500 Tons Bessemer	21.00 cash.
2,500 Tons Bessemer	20.50 cash.
2,000 Tons Bessemer Valley Furnace	20.00 cash.
1,000 Tons Gray Forge	16.75 cash.
1,000 Tons Gray Forge	17.00 cash.
1,000 Tons Bessemer	20.75 cash.
1,000 Tons Bessemer	20.50 cash.
750 Tons Bessemer	21.00 cash.
750 Tons Gray Forge, Cold Short	16.40 cash.
500 Tons Gray Forge	16.80 cash.
500 Tons Bessemer	21.00 cash.
600 Tons Gray Forge Storage	16.25 cash.
500 Tons Mottled and White Extra	16.70 cash.
300 Tons Bessemer	20.95 cash.
100 Tons No. 2 Foundry	17.50 cash.

Coke, Native Ore.

1,000 Tons Gray Forge	17.00 cash.
50 Tons Silvery	17.25 cash.
50 Tons No. 2 Foundry	17.85 cash.
50 Tons No. 2 Foundry	17.50 cash.

Muck Bar.

1,500 Tons Neutral	31.00 cash.
1,000 Tons Neutral	31.00 cash.
1,000 Tons Neutral, November and December	31.00 cash.
750 Tons Neutral, December	30.50 cash.
500 Tons Neutral, November	30.75 cash.

Steel Wire Rods.

500 Tons American Fives at Cleveland	48.50 cash.

Steel Bloom Ends.

500 Tons Bloom Ends	23.50 cash.
375 Tons Bloom Ends	23.00 cash.

Speigel.

80 Tons 20 per cent.	40.00 cash.

Old Iron and Steel Rails.

3,000 Tons American Ts	27.50 cash.
500 Tons American Ts	27.25 cash.
500 Tons American Ts	27.20 cash.
300 Tons Long Steel Rails	22.50 cash.

Ferro-Manganese.

100 Tons 80 per cent.	94.00 cash.
50 Tons 80 per cent.	92.50 cash.
50 Tons 80 per cent.	91.00 cash.

Skelp Iron.

100 Tons Sheared	2.10	4 mo.
500 Tons Wide Grooved	1.80	4 mo.
500 Tons Narrow Grooved	1.75	4 mo.

New Steel Rails.

3,500 Tons Winter Delivery	34.00 cash.

Steel Slabs and Billets.

1,000 Tons Nail Slabs at Works	34.00 cash.
750 Tons Billets	35.00 cash.
500 Tons Billets	34.75 cash.
500 Tons Nail Slabs	34.50 cash.
400 Tons Billets	34.00 cash.

Prices.

Coke or Bituminous Pig—		Muck-Bar	30.00@31.00
Foundry No. 1	$18.00@18.25	Steel Blooms	33.50@34.85
Foundry No. 2	17.00@17.50	Steel Slabs	33.00@34.50
Gray F. No. 3	16.50@17.00	Steel Cr'p Ends	23.00
" No. 4	16.00@16.25	Steel Bl. Ends	23.00@23.75
White	15.75@16.00	Ferro-Man., 80%	91.00@94.00
Mottled	15.70@16.00	Steel Billets	34.00@34.85
Silvery	16.50@20.00	Old Iron Rails	27.00@27.50
Bessemer	20.50@21.00	Old Steel Rails	21.00@22.00
Low Phos	25.00@25.50	No. 1 W. Scrap	20.50@21.50
Charcoal Pig—		No. 2 W. Scrap	18.00@19.00
Foundry No. 1	23.50@24.50	Steel Rails	33.50@34.00
Foundry No. 2	22.00@22.25	" light sec	34.00@37.00
Cold-Blast	25.00@28.00	Bar Iron, nom.	1.80@ 1.90
Warm-Blast	24.00@25.00	Iron Nails	2.25@ 2.30
10 + 12% Spiegel	@35.50	Steel Nails	2.25@ 2.30
20% Spiegel	@40.00	Wire Nails	2.60@ 2.65

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Nov. 1.

Heavy Chemicals.—Not for several years past has the market for heavy chemicals been in precisely the same condition as it is at present. The demand for soda ash or refined alkali is large and urgent. There is nothing to be had on the spot, everything afloat is sold, and stocks in Liverpool are very light. In fact, there is little or nothing to be had for delivery within this year, or until about the last week in December. In Liverpool, for a month or six weeks there has been a gradual absorption of available supplies for home and Continental consumption, but until last week, while the volume of trade here was moderate, no apprehension of a scarcity of material was apparent. Last week, however, when the glass makers descended upon the market in a body, having settled with their striking employés sooner than was expected, the stock here was quickly exhausted, and since then, in their eagerness to secure supplies, they have advanced prices from $1.25 per 100 pounds to $1.45. A large number of contracts for delivery over 1890 have also been placed, but in most cases these have been secured at figures lower than those now quoted for early delivery.

So long as consumption continues as active as at present the fact that there will probably be no combination of caustic soda makers next year loses its importance.

Prices have not been advanced from the figures quoted last Friday. For carbonated soda ash, 48 per cent., from $1.40@$1.50, according to brand and quantity as quoted, and for 58 per cent., $1.37½ is asked. For refined alkali, either Brunner, Mond or Solvay, for 58 per cent., $1.35, and for 48 per cent., $1.45@$1.50 is asked.

Caustic soda is likewise firm at the advance named last week, with a very light supply. For the higher tests, 70 and 74 per cent., we quote $2.40 @$2.45, according to quantity. For 60 per cent., $2.52@$2.57½ is asked.

Bleaching powder is weaker. On the spot from $1.70@$1.75 is quoted. Production has again been increased by the English makers, and the scarcity of spot supplies noted last week has been removed.

The following information of interest is given in a Newcastle letter to a London contemporary, dated October 18th: "The London demand for soda crystals keeps the makers actively employed. The deliveries of caustic soda and bleaching powder have during the past week been large, and the stocks are much diminished. The make of crystal soda for the nine months ended on 30th September last was 64,058 tons. For the corresponding period of the previous year the total output was 79,440 tons. The crystal soda manufacture of this district has for some time past been a diminishing quantity. The Newcastle Chemical Works Company are well advanced in the erection of the plant for the recovery of sulphur by Chance's process; and the firm, which has already begun to work the process, is turning out sulphur steadily."

Acids.—The only occurrence of interest during the week was the meeting of the manufacturers in their rooms, at the Fulton Club, on Wednesday afternoon. No business of importance was transacted, save that it was learned that satisfactory progress has been made with the permanent organization scheme, and it is thought that this will be consummated by the next meeting, so that members of the trade may be able to thoroughly enjoy their Thanksgiving dinner. So far as can be learned, harmony continues to prevail. Trade continues good, with production and consumption about equal. It is earnestly to be hoped, for the good of the trade, that some more permanent form of agreement may be secured shortly. It is, of course, undeniable that the combination has worked satisfactorily thus far, but its members must not lose sight of the fact that consumption has been unusually good, and had it been otherwise the result might have been different. The moral of which is, to prepare for dull times when such preparation is possible.

Fertilizing Chemicals.—Ammoniacal material continues unsettled in value. The Baltimore firm referred to last week, Messrs. Thos. H. White & Co., continues to "bear" the market, and the Northern sellers are therefore unable to maintain a firm position, a fact which buyers have been quick to appreciate and take advantage of. The volume of business is not large, as there seems to be considerable doubt as to actual values, and quotations must therefore be somewhat nominal. For low-grade city blood, $2.05@$2.07½. may still be quoted, and it is understood that the Baltimore "bears" have offered it as low as $2. Other ammoniates are, of course, affected by this weakness, but apparently are not quotably changed from the figures last week. In detail the usual price list is as follows: Azotine, $2.12½@$2.15; dried blood, city, low grade, $2.05@$2.07½; high grade, $2.17½@$2.20. For tankage, high grade, 9 to 10 per cent. ammonia and 15 to 20 per cent. phosphate, $22.50 per ton is quoted, and low grade, 7 to 8 per cent. ammonia and 25 to 30 per cent. phosphate, $21@$21.50. Fish scrap, $22@$23 per ton, f. o. b. factory. Sulphate of ammonia at $3 @$3.05 per cwt. Concentrated tankage, $2.15. Refuse bone-black, guaranteed 70 per cent. phosphate, $19.50@$20 per ton. Dissolved bone-black is 87½@90c. per unit for available phosphoric acid, and acid phosphate 79@80c. per unit for available phosphoric acid. Steamed bones, unground, $20@ $23.50; ground, $27.

Charleston rock, undried, $5.75 per ton; kiln dried, $6.75@$7 per ton, both f.o.b. vessels at the mines. Freights by sail from Charleston to New York, $3 per ton. Charleston rock, ground, $11, ex-vessel at New York. The largest Charleston producers are now asking $7 per ton for kiln dried rock, f.o.b. vessels at the mines, and freights from Charleston have stiffened to $3.25. It is now almost impossible to secure any steamer shipments, as the steamers are all engaged in carrying cotton, which is, of course, more profitable than the transportation of rock. Consequently quotations must be made ex-vessel, and buyers will probably be obliged to take a large part of a cargo in making purchases at the figures named.

There has been an improved demand for double manure salts, basis 48 per cent. potash. We continue to quote the syndicate price $1.20 on the spot and $1.15 for futures. For the limited amount of high grade sulphate potash in store, the remnant of last June's receipts, $2.35 is quoted.

Muriate of Potash.—There have been arrivals of 400 tons this week at Charleston. The accumulation of this article has not been reduced, and has passed into the consumers' hands. There is, however, no apparent scarcity.

Kainit.—A sale of 600 tons for November shipment made during the week will take all that is due from the German syndicate on their contracts to their New York agents for this year's delivery. We continue to quote the official price $10 per ton actual weight and $9.75 per ton foreign invoice weight.

Miscellaneous. — Brimstone. — The market is very quiet and prices are unchanged at $19.75 for best unmixed seconds on the spot and $19 for the same to arrive. For thirds on spot $19 is quoted. Nitrate of soda is in light demand and prices are slightly easier at $1.90.

NOTES OF THE WEEK.

In a recent report, the United States Consul at Catania, Sicily, furnishes the interesting information that the sulphur mines of Sicily number 567, of which 271 are in the province of Girgenti, 226 in the province of Caltanissetta, 45 in the province of Catania, and 25 in the province of Palermo. Of these 567 there are 376 in operation and 191 closed up. It is also shown that in 1888 the exports of brimstone from Sicily were larger than during any other year on record, amounting to 1,024,816 cantars.

The Central City Fertilizer Company has been organized with a stated capital of $100,000 to operate the fertilizer factory of J. O. Jelks & Co., at Hawkinsville, Ga.

Two large companies have recently been organized to develop the Florida phosphate deposits. Fuller information is given under the head of Florida in our Mining News columns on another page. This is a subject of great importance to the fertilizer trade. Many believe that Charleston phosphate rock will have an important rival in the Florida deposits.

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, Nov. 1.

Roofing Slate.—Since our last report there has been no change in the situation of this market. Pennsylvania black roofing-slate continues in large demand in excess of the supply. Many sellers have been able to obtain higher prices than agreed upon by the respective associations of quarrymen at Bangor and Pen Argyl, Pa., and the production from this district continues large. The York County and the Slatington producers are also turning out their usual quota.

Concerning the trade in the Bangor district, we condense the following interesting information furnished to a contemporary by an anonymous correspondent, who, it is supposed, is none other than either John I. Blair or Conrad Miller, the two capitalists who are so largely interested in the Northampton quarries. "The present flourishing condition of the roofing-slate business of the Northampton County, Pa., far exceeds that of any season since the quarries were developed. The present ruling prices are from 50 cents to 75 cents per square in advance of those in force one year ago. The output of black roofing-slates in and about Bangor and Pen Argyl, Pa., has increased nearly 100 per cent. during the past eight years, until it now reaches fully 300,000 squares per annum. This vast production finds its principal market in the Western States lying between the Allegheny Mountains and the Missouri River. The demand for slates during the past two years has especially increased in Ohio, Indiana and Illinois, and in the large cities in nearly all the Western States; the cities of Cleveland, Chicago, St. Louis and Kansas City alone consuming upward of 40,000 squares annually. Another section which now bids fair to become a valuable market for Pennsylvania slate is the Southern States, where a number of extensive sales have been made during the present year, and with the expected advent of building in the South our manufacturers calculate on a permanent market in that quarter. During the season

of 1888 fully 35,000 squares were exported to the Australian market, but during the winter and spring months of the present year nearly all this trade ceased, and a number of our manufacturers expected a somewhat dull season during 1889 on this account, believing it would be difficult to place such an additional quantity of slate in one season in the home market. The loss of this export trade, however, has remained practically unnoticed, and should it reopen in anything like its former proportions it could not be handled unless a marked stagnation should occur in the Western trade. A peculiar feature of the present season's demand has been the increased call from the Western cities for the smaller slates, 12 and 14 inch sizes, that heretofore have commanded a limited sale, except in the New Orleans market, where medium and large slate are seldom sold.

"The outlook for an increased production of Bangor roofing-slate, at least during the next two or three years, is not to be looked for, as all the quarries in and about Bangor are now producing their utmost limit, and until new openings are developed sufficiently to make them a factor in the market the present season's product will remain the maximum on this particular quality of slate. At Pen Argyl, Pa., however, where there are at present produced upward of 100,000 squares of black slate per year, extensive preparations are being made for an early increase, due to the personal efforts of Mr. Conrad Miller, President of the Bangor & Portland Railway, and the Hon. John I. Blair, of Blairstown, N. J., who together own and control slate property in this vicinity valued at $1,000,000. Their operations will increase the production of Pen Argyl upward of 50,000 squares during the next three years. As this increased production, however, will not reach its maximum until at least three years have expired, it will hardly become a factor in the market should anything like the present increased demand continue, and the roofing-slate operators of Northampton County, Pa., cannot but congratulate themselves on the present and future outlook of their business."

The Pen Rhyn slate quarry and works, near Portland, Pa., have been sold by the sheriff to H. K. Shriver, of Baltimore, for $10,400. They will be put in operation at once.

Brick.—About three-fourths of the yards along the Hudson have now suspended work for the winter, but shipments continue steadily. The demand has improved somewhat, and takes all that comes forward. Prices have not been further advanced, ranging from $6.50 to $7 for Up Rivers and Haverstraws, with possibly $7.25 obtainable for very good grades of the latter. Jerseys are quoted at $5.75 to $6.50, according to grade. Pale is in very good demand at $3.75. Only about five per cent. of the yards are neither shipping nor making.

Cement.—Prices continue low, with moderate volume at 95c. to $1.10 for Rosendale, according to brand, and $2.30 to $2.40 for imported Portland.

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IMPORTS AND EXPORTS OF METALS AT NEW YORK OCTOBER 19 TO OCTOBER 26, 1889, AND FROM JANUARY 1.

IMPORTS.

Spelter.	Week. Tons.	Year. Tons.
Amer. Metal Co		170
Downing & Co., R.F		28
Hendricks Bros		28
Lamarche's Sons, H.		6
Lewisohn Bros		84
Naylor & Co	28	397
Total	28	715
Corres. date, 1888		1,242
Nickel.	Lbs.	Lbs.
McCoy & Sanders		11,240
Total		11,240
Corres. date, 1888		138,166
Antimony.	Casks.	Casks.
Total	1,148	2,506
Corres. date, 1888	155	2,696
Pig Lead.	Lbs.	Lbs.
Bruce & Cook		111
Caswell, E. A		10
Erie Dispatch		9
Foley, E		43
Henderson Bros		11
Hendricks Bros		78
Total		262
Corres. date, 1888		510
Tin.	Tons.	Tons.
Amer. Metal Co		1,269
Bidwell & French		1,284
Bruce & Cook		33
Bursley, Ira		75
Carter, Hawley & Co		46
Cohn & Co., A		12
Crooke S. & R. Co		10
Crooks & Co		325
Davol & Son, John		29
Hendricks Bros		194
Herold, Emil		20
Knauth, N. & Kuhne		10
Lehmarer, S. & Co		167
Mendel & Tompkins		1
Muller, Schall & Co		960
Naumann, F		2
Naylor & Co		1,715
Nissen, Geo		73
Phelps, Dodge & Co		3,035
Pope, J. E., Jr		268
Schmarer & Co		11
Schreider, J. & Co		10
Thomsen, A. A		151
Thomsen, D		196
Townsend, J. R		135
Unnamed		15
Wheeler & Co		1
Total		9,927
Corres. date, 1888	1,465	11,155
Tin Plates.	Boxes.	Boxes.
American MetalCo		477
American MetreCo	187	620
Brown & Co., V. H		350
Bruce & Cook	2,988	71,717
Byrne & Co., J		8,392
Central Stamp. Co	405	74,055
Coddington & Co	3,125	132,925
Cohen, S. M		272
Cohn & Co., A	2,344	32,688
Con. Fruit Jar Co		2,042
Cort & Co., N. L	9,064	136,859
Corbier, F. & S		5,729
Crooks & Co	1,737	70,591
De Milt & Co	1,052	13,493
Dickerson, V. D	2,129	305,104
Downing & Co		366
Erie Dispatch		244
Fenton, D. U	1,371	5,007
Foley, E		74
G. L. N		75
Holder & Herrick		271
Iron Clad M. Co		283
Ismay, J. B		500
Lalance & G	328	7,185
Lazard Bros		2,356
Lombard, Ayres		3,000
Merchant & Co	2,378	24,746
Mersick & Co	1,514	11,596
Morewood & Co		7,568
Mulholland & H		767
Newell Bros		294
Payne & Son		313
Phelps, Dodge & Co	14,439	561,841
Pratt Mfg. Co	2,534	195,691
Sanders Bros		479
Shepherd & Co	2,570	26,292
Somers Bros		1,356
Stillwell, G. H	325	325
Taylor Co., N. & G	278	2,282
Thomsen, A. A	3,308	146,949
Warren & Co., J. M		4,134
Wheeler & Co	1,451	18,719
Whittemore & Co	1,139	34,260
Wolff & Reesing	930	8,314
Total	55,686	1,906,160
Corres. date, 1888	153,716	1,588,020
Pig Iron.	Tons.	Tons.
Baldwin, A		766
Bartlett, N. S		1,200
Crocker Bros		5,900
Crooks & Co		500
Drummond, McC. & Co	100	3,560
Henderson Bros	300	2,816
Godwin & Son, A. G		390
Irvin & Co., R		300
Martin, W. T		200
Naylor & Co		50
Page, Newall & Co	391	469
Perry & Ryer		125
Pierson & Co		500
Pope, Sons & Co		250
Sheldon & Co., G. W		200
Stetson & Co		5,650
Topper & Beattie		100
Walbaum & Co		275
Whittemore & Co., H		50
Williamson & Co		3,700
Total	400	28,044
Corres. date, 1888	1,505	30,156
Steel Sheets, Billets, Forging, etc.	Tons.	Tons.
Abbott & Co		2,450
Ames, W. T		303
Austin & Co		30
Baldwin Bros. & Co		15
Belcher, H. W		95
Boker, C. F		131
Carey & Moen		118
Carter, G. F		200
Coddington & Co		24
Crenshaw, Hugh		27
Crooks & Co		292
Cortis, R. J		408
Curran, J		5
Dana & Co	458	14,543
Downing & Co		171
Erie Despatch		40
Galpin, S. H		497
Hugill, Chas		95
Ismay, J. B		174
Lalance, & G		106
Lazard Bros		6
Leng's Sons, J. S		114
Lublin & Estey		7
Lundberg, G		51
Mersick & Co		5
Milne & Co	117	3,007
Montgomery & Co		5
Naylor & Co		2,750
Newton & S		35
Oelrich & Co		389
Pierson & Co		323
Pilditch, F. S		75
Power, C. W		36
Prosser, Thos		496
Roebling's Sons		301
Schulze & R		13
Standard Oil Co		222
Stetson & Co		11
Strouse & Co., M		25
Temple & L		15
Wagner, W. F		373
Wallace & Co		5
Wetheral Bros		2
Whitney & W		30
Wiel Elie		44
Wiell & Co		7
Williams, W		73
Williams & W		95
Wolff, R. H		347
Wright, P. & Son		4
Total	575	27,600
Corres. date, 1888	5,201	22,482
Bar Iron.	Tons.	Tons.
Abbott & Co., J	182	3,337
Bacon & Co	332	1,334
Dana & Co		25
Downing & Co		559
Froment, F		10
Fuller, Dana & Fitz		23
Haines, C. A		2
Holt & Co., H. N		274
Jacobus, E. G		22
Lang & Co		3
Lindenberg, N		8
Lundberg, G		1,540
Lundell, C. G		160
Merchants' Dispatch		15
Milne & Co	175	2,012
Muller, Schall & Co	26	601
Naylor & Co		571
Ogden & W		7
Page, N. & Co		1,752
Plenty, John		2
Froment, F		440
Wells, F., & Co		15
Total	715	12,414
Corres. date, 1888	2,837	8,460
Steel and Iron Rods.	Tons.	Tons.
Abbott & Co., J	128	5,484
American S. Co		951
Bacon & Co	152	502
Baker, H		3
Belcher, H. W		14
Boker, H		35
Bruce & Cook		20
Carey & Moen	8	944
Cooper, H. & Co		58
Crabb & Co., W		17
Dana & Co		2,203
Downing & Co	26	791
Durbrow, Walter		829
Eckstein, G. C		298
Fuller, D. & T		15
Galpin, S. H	90	1,447
Greeley & Co		8
Hazard Mfg. Co		20
Heyn, A		2,034
Hugill, Chas		27
Jansen, J. A		150
Lee & Co., James		105
Lilienberg, N		56
Lundberg, G	15	810
Lundell, C. G	2	248
Merritt, A		3
Milne & Co		1,670
Montgomery & Co		120
Muller, Schall & C		453
Naylor & Co	70	10,964
Nichols, B. J		10
Oelrichs & Co		103
Page, N. & Co		624
Pilditch, F. S		15
Plenty, J		1
Pratt Mfg. Co		30
Roebling's Son	26	2,262
Wagner, W. F		8
Wetherall Bros		2
Wheeler & Co., E. S		120
Whitney & Co	115	895
Williams & W		5
Wolf & Co		4,363
Wright P. & Co		3
Total	632	39,927
Corres. date, 1888	4,440	56,452
Old Rails.	Tons.	Tons.
Baldwin Bros. & Co		240
Bowring & A		57
Crossman & Bro		2,162
Frankfort, M		420
Henderson Bros		150
Neumark & Gross		6,115
Perkins, C. L		433
Perry & Ryer		177
Sheldon & Co		203
Ward & Co., J. E		21
Wolff, H		239
Total		9,789
Corres. date, 1888		10,097
Scrap Iron.	Tons.	Tons.
Bowring, A		25
Burgass & Co		162
Crossman, W. H. & Bro		500
Downing & Co		321
Funch, E. & Co		397
Henry, A. F		100
Neumark & Gross		500
Ruger, Theo	445	445
Spaulding & Co		172
Ward & Co., J. E		559
Watjen, T. & Co		152
Total	445	3,833
Corres. date, 1888	328	3,293
Charcoal Iron.	Tons.	Tons
Bacon & Co		97
Downing & Co		671
Lilienberg N		6
Milne & Co		94
Muller, S. & Co		135
Naylor & Co		45
Page, N. & Co		754
Total		1,802
Corres. date, 1888		404
Sheet Zinc.	Lbs.	Lbs.
Crooks & Co		441,814
Lemarch's S's, H		1,554
Total		443,368
Corres. date, 1888		375
Spiegeleisen.	Tons.	Tons.
Abbott & Co		3,234
Blakely & McLellan	231	4,587
Crocker Bros	344	17,009
Dana & Co		14,119
Farris & Co		325
Geisenheimer & Co		210
Hernsheim, L		1,818
Jansen, J. A		10,466
Naylor & Co		13,540
Perkins, C. L		4,860
Pierson, C. L		15
Walbaum Bros		675
Total	575	59,130
Corres. date, 1888	5,792	41,990
Sheet Iron.	Tons.	Tons.
Coddington & Co		456
Downing & Co		16
Kelly, Hugh		5
Total		477
Corres. date, 1888	25	1,230
Iron Ore.	Tons.	Tons.
Bergen Pt. Chem. Co		9,951
Bowring, A		1,300
DeFlores, R		200
Earnshaw, A	300	5,306
Lawrence, Johnson & Co		480
Total	35	9,986
Corres. date, 1888		26,394

EXPORTS.

Copper.	Pounds.	Pounds.
Abbott & Co	11,222	598,468
Amer. Metal Co	168,794	3,618,238
Am. & Patterson		2,897,706
Barber & Co		100,000
Belmont & Co		987,500
Friedenstein, Jas		2,258
Fyfe, Robert		100,000
Hurst, F. W. J		113,000
Lewisohn Bros	269,810	831,182
Naylor & Co		1,570,500
Orford, C. & S Co		112,013
Piper, D. & Co		3,898
Raftery, T. E		362,000
Seaman, Sam'l H		234,615
Ward & Co., J. E		11,250
Total	449,826	11,132,337
Corres. date, 1888	243,633	23,424,337
Copper Matte.		
Abbott & Co		427,613
Amer. Metal Co	224,632	4,292,226
Am. & Patterson		1,670,979
Clark, W. A		879,619
Cortis, R. J		240,660
Henriott, F		5,293,560
Nichols & Co., G. H		224,879
Oelrichs & Co		265,800
Seaman, Sam'l H		19,400
Wil'ms, T hune	1,219,991	15,387,793
Total	1,444,623	29,691,469
Corres. date, 1888	603,937	37,101,505
Copper Ore.		
Burgass & Co		32,460
R. J. Cortis		34,100
Total		66,560
Corres. date, 1888		181,86?

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and amount of last.			Dividends. Total paid.	Date and amount of last.		
1	Adams S. L.	Colo.	$1,500,000	150,000	$10	*				$555,000	Jan.	1887	.15
2	Alice, S. C.	Mont	10,000,000	400,000	25	*				775,000	Dec.	1888	06¼
3	Alma Cons., G.	Idah.	300,000	30,000	10					45,000	Dec.	1888	.50
4	Alturas, G.	Idah.	1,500,000	300,000	5					262,500	Jan.	1888	37½
5	Amy & Silvermt'n, s.	Mon.		341,419						247,330	Aug.	1887	12½
6	Atlantic, C.	Mich	1,000,000	40,000	25	$280,000	Apl.	1876	$1.00	520,000	Feb.	1889	2.00
7	Argenta, S.	Nev.,	10,000,000	100,000	100	335,000	July	1889	.10	40,000	Feb.	1880	.20
8	Aspen Mg. & S., S. L.	Colo.	2,000,000	200,000	10	*				360,000	July	1889	.20
9	Aurora, I.	Mich	2,000,000	100,000	20	*				155,000	Oct.	1887	1.87½
10	Bassick, G. &	Colo.	10,000,000	100,000	100					400,000	Mar.	1884	1.00
11	Belle Isle, S.	Nev.,	10,000,000	100,000	100	155,000	Apl.	1889	.10	300,00.	Dec.	1888	.25
12	Belcher, G. &	Nev.	10,400,000	144,000	100	2,322,000	Feb.	1889	.50	15,397,200	Apl.	1876	1.00
13	Bellevue Idaho, S. L.	Idah.	1,250,000	125,000	10	88,750	May	1889	.10	187,500	Jan	1887	10
14	Bodie Con., G. &	Cal.	10,000,000	100,000	100	550,000	Mar.	1889	.50	1,295,000	Apl.	1885	50
15	Boston & Mont, G.	Mon.	2,500,000	250,000	10	*				520,000	Jun.	1886	.10
16	Boston & Mont., C. & S.	Mon	2,500,000	100,000	25	*				900,000	Oct.	1889	1.00
17	Breece, S.	Colo	200,000	200,000	25	*				2,000	Feb.	1880	.01
18	Brooklyn Lead, L. &	Utah	500,000	150,000	10					127,000	July	1887	.05
19	Bulwer, G.	Cal.	10,000,000	100,000	10	130,000	Aug.	1889	.25	175,000	Jan.	1884	.10
20	Bunker Hill & Sull.	Idah.	3,000,000	300,000	10	*				150,000	Oct.	1883	.06⅔
21	Caledonia, G.	Dak.	10,000,000	100,000	100	505,000	May	1886	.15	136,000	Oct.	1889	.08
22	Calumet & Hecla, C.	Mich	2,500,000	100,000	25	1,200,000				32,350,000	Oct.	1889	5.00
23	Carbonate Hill, S. L.	Colo.	1,500,000	200,000	10	*				80,000	Apl.	1884	05
24	Carlisle, G.	N. M.	1,000,000	200,000	5					175,000	Dec.	1888	12½
25	Castle Creek, G. &	Idah.	100,000	100,000	1					51,000	Oct.	1883	.03
26	Catalpa, S. L.	Colo.	3,000,000	300,000	10	*				270,000	May.	1884	.10
27	Central, C.	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,930,000	Feb.	1889	2.00
28	Chrysolite, S. L.	Colo.	10,000,000	200,000	50	*				1,650,000	Dec.	1884	.25
29	Colorado Central, S. L.	Colo.	2,750,000	275,000	10	*				406,000	July	1889	.05
30	Confidence, S. L.	Nev.,		24,960		287,440	Apl.	1887	.50	199,680	Apl.	1889	1.00
31	Cons. Cal. & Va., G. & S.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	3,196,800	Sept	1889	.50
32	Contention, S.	Ariz.	12,500,000	250,000	50					12,587,000	Dec.	1884	.25
33	** Cop. Queen Cons, C.	Ariz.	1,400 000	440,000	10					140,000	Oct	1888	.50
34	Crescent, S. L. G.	Utah	15,000,000	600,000	25					228,000	Oct.	1888	.03
35	Crown Point, G. &	Nev.	10 000 000	100,000	100	2,880,000	Sept	1880	.50	11,588 000	Jan.	1876	2.00
36	Daly, S. L.	Utah	3,000,000	150,000	20					1,200,000	Sept	1889	.25
37	Deer Creek, S. &	Idah.	1,000,000	200,000	5					20,000	Jun.	1889	.05
38	Deadwood-Terra, G.	Dak.	5,000,000	200,000	25	*				1,000,000	Nov.	1887	.10
39	Derbec B. Grav., G. &	Cal.	10,000,000	100,000	100	90,000	Dec.	1881	.10	180,000	May	1887	.10
40	Dunkin, S. L.	Colo.	5,000,000	200 000	25	*				390,000	Sept	1889	.05
41	Dunstone, G. & L.	Mont	1,000 000	200,000	5	*				6,000	Nov.	1888	.03
42	Eclipse	Colo.	10,000	100,000	1					20,000	Nov.	1887	.10
43	Elkhorn, G. &	Mont	1,000,000	100,000	10	50,000	July	1883	.50	170,000	July	1887	.05
44	Empire L., G.	Mont	500,000	100,000	5					70,500	Oct.	1887	37½
45	Eureka Con., G. & L.	Nev.,	5,000,000	50,000	100	550,000	Jun.	1889	.50	4,955,000	July	1888	.25
46	Evening Star, S. L.	Colo.	500,000	50,000	10	*				1,425,000	Apl.	1889	.25
47	Excelsior, G.	Cal.,	10,000,000	100,000	100	560,000	Sept	1885	1.00	875,000	Oct.	1886	.25
48	Father de Smet, G.	Dak.	10,000,000	100 000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1883	.20
49	Franklin, G.	Mich	5,000,000	200,000	25	220,000	Jun.	1871		800,000	Dec.	1888	2.00
50	Freeland, G. & S. C.	Colo.	5,000,000	200,000	25	*				190,000	July	1886	.10
51	Fresno Enterprise, G	Cal.,	5,000,000	100,000	50		Mch	1883	.10	110,000	July	1882	.10
52	Garfield Lt., G. &	Nev.	500,000	100,000	5					85,000	Apl.	1888	12½
53	Golconda, G. &	Idah.	1,000,000	100,000	10					120,000	May	1888	.60
54	Gould & Curry, G. &	Nev.,	10,800,000	108,000	100	4,454,600	Oct.	1889	.30	7,826,800	Oct.	1870	10.00
55	Grand Central, S.	Ariz.	10,000,000	100,000	10					625,000	Dec.	1882	.25
56	Grand Prize, S.	Nev.,	10,000,000	100,000	100	685,000	Oct.	1888	.30	497,100	Mar.	1884	.25
57	Granite, S. L.	Idah.	500,000	500,000	1	*				10,000	Jun.	1888	.02
58	Granite Mountain, S.	Mont	10,000,000	400,000	25					7,200,000	Sept	1889	.50
59	Green Mountain, G.	Cal.,	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
60	Hale & Norcross, G. &	Nev.	11,200,000	112,000	100	5,086,000	July	1887	.50	1,162,000	July	1888	.50
61	Hecla Con., G. & L.	Mont	1,500,000	30,000	50					1,332,500	May	1889	.50
62	Hel'n Mg. & Red., G. & L.	Mont	3,315,000	663,000	5					197,973	July	1886	.06
63	Holmes, S.	Nev.	10,000,000	100,000	100	300,000	Sept	1885	.10	75,000	Apl.	1886	.25
64	Holyoke, G.	Idah.	200,000	200,000	1					27,000	Feb	1885	.10
65	Homestake, G.	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	4,456,250	Oct.	1889	.10
66	Honorine, S. L.	Utah	500,000	250,000	2	37,500	Apl.	1889	.05	125,000	Sept	1887	.05
67	Hope, S.	Mont	1,000,000	100,000	10	*				233,252	Apl.	1888	.25
68	Hora-Silver, S. L.	Utah	10,000,000	400,000	25	*				4,000,000	Nov.	1884	.50
69	Hubert, G.	Colo.	500,000	50,000	10	*				239,500	Oct.	1888	.11
70	Idaho, G.	Cal.,	310,000	3,100	100					5,220,400	Oct.	1889	5.00
71	Ideal, S. L.	Colo.	1,500,000	50,000	10					15,000	Oct.	1886	.05
72	Illinois, S.	N. M.	100,000	100,000	1					45,000	Apl.	1889	.20
73	Independence, S.	Nev.,	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879	.25
74	Iron Hill, S.	Dak.	5,000,000	200,000	10	134,000	July	1889	.03	156,250	Nov	1887	.07½
75	Iron-Silver, S. L.	Colo.	10,000,000	500,000	20	*				2,500,000	Apl.	1889	.20
76	Jackson, G. &	Nev.	5,000,000	50,000	100	237,500	Nov	1880	.40	55,000	Jun	1889	.10
77	Jay Gould	Mont	2,000,000	40,000	5	*				365,000	Apl.	1889	.04
78	Jocusitta, G.	Mex.	2,500,000	250,000	10					1,200,000	Feb.	1886	.50
79	Jumbo, G.	Colo.	2,000,000	200,000	10					35,000	Oct.	1887	.02½
80	Kentuck, G.	Nevo	3,000,000	30,000	100	360,000	July	1889	.30	1,350,000	Dec.	1886	.10
81	La Plata, S. L.	Colo.	2,000,000	200,000	10	*				610,000	Sept	1882	.30
82	Leadville Cons., S. L.	Colo.	4,000,000	400,000	10	*				423,000	Apl.	1887	.05
83	Lexington, G. &	Mont	4,000,000	40,000	100	*				565,000	Jan.	1885	2.00
84	Little Chief, S. L.	Colo.	10,000,000	200,000	50	*				800,000	July	1888	.10
85	Little Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*				1,050,000	Mch.	1880	.50
86	Marion Bullion, G.	N. C.	300,000							15,000	Jan.	1886	
87	Martin White, S.	Nev.,	10,000,000	100,000	100	1,175,000	Jan.	1889	.25	140,000	Dec.	1886	.25
88	Mary Murphy, G. &	Colo.	350,000	3,500	100	*				175,000	May	1888	5.00
89	Minnesota, C.	Mich	1,000,000	40,000	25	420,000	Apl.	1886	1 00	1,826,000	Mar.	1876	
90	Mono, G.	Cal.	5,000,000	50,000	100	90,350	July	1889	.25	12,500	Mar.	1886	.25
91	Montana, Lt., G. &	Mont	3,300,000	660,000	5					2,355,285	Oct.	1889	.12½
92	Morning Star, S. L.	Colo.	1,000,000	100,000	10					775,000	Mar.	1889	.25
93	Moulton, S. G. &	Mont	2,000,000	40,000	50	*				380,000	Dec.	1887	.07½
94	Mount Pleasant, G.	Cal.	150,000	150,000	1	*				150,000	Feb.	1887	.30
95	Mt. Diablo, S.	Nev.	5,000,000	50,000	100	137,500	Jun.	1880	2.00	150,000	Oct.	1889	.20
96	Napa, Q.	Cal.,	700,000	100,000	7					310,000	July	1889	.10
97	Navajo, G. &	Nev.,	10,000,000	100,000	100	485,000	Apl.	1888	.30	365,000	Apl.	1889	.10
98	New Guston, S.	Colo.	500,000	100,000	5					200,000	Oct.	1889	.50
99	N. Hoover Hill, G. &	N. C.	300,000	120,000	2½	*				30,000	Dec.	1885	.06¾
00	Northern Belle, S.	Nev.,	5,000,000	50,000	100	425,000	Jan.	1884	8.50	2,400,000	Apl.	1883	.50
101	North Belle Isle, S.	Nev.,	10,000,000	100,000	100	400,000	Sept	1889	.20	230,000	May	1888	.50
102	North Star, G.	Cal.,	1,000,000	100,000	10					200,000	Sept	1889	.50
103	Ontario, S. L.	Utah	15,000,000	150,000	100					10,400,000	Sept	1889	.50
104	Ophir, G. &	Nev.,	10,000,000	100,000	100	4,159,440	May	1889	.50	1,995,800	July	1882	1.00
105	Original, S.	Mont	1,500,000	60,000	25	*				123,000	July	1888	.05
106	Osceola, C.	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,323,500	Mar.	1889	1 00
107	Oxford, G.	N. S.	125,000	125,000	1	*				74,500	Sept	1888	.02
108	Paradise Valley, G. &	Nev.	10,000,000	100,000	100	57,000	Apl.	1888	.15	150,000	Apl.	1887	.10
109	Parrot, C.	Mont	1,800,000	180,000	10					372,000	May	1889	.10
110	Peacock, S. & G.	N.M.	2,000,000	200,000	10	*				60,000	Nov.	1886	
111	Plumas Eureka, C.	Cal.,	1,400,350	140,035	10					2,495,310	Apl.	1889	.50
112	Plutus, G. & C. L.	Colo,	2,000,000	200,000	10	*				20,000	Feb.	1886	.10
113	Plymouth Con., G.	Cal.,	5,000,000	100,000	50	*				2,280,000	Feb.	1888	.40
114	Quicksilver, pref., Q.	Cal.,	4,300,000	43,000	100					1,728,462	Oct.	1889	1.50
115	" com., Q.	Cal.,	5,700,000	57,000	100					643,867	July	1882	.40
116	Quincy, C.	Mich	1,000,000	40,000	25	200,000	Dec.	1862		5,250,000	Aug.	1889	2.00
117	Richmond, S. L.	Nev.,	1,350,000	54,000	25	*				4,312,587	Jun.	1887	1.25
118	Ridge, C.	Mich.	500,000	20,000	25	219,939	Mar	1886	.50	99,765	Feb.	1880	.50
119	Robinson Con., S. L.	Colo.	10,000,000	200,000	50					585,000	Mar.	1886	.05
120	Robert E. Lee, S. L.	Colo	10,000,000	500,000	20					100,000	Dec.	1882	.50
121	Savage, S.	Nev.,	11,200,000	112,000	100	6,542,000	July	1889	.50	4,480,000	July	1869	3.00
122	Shoshone, G.	Idah.	150,000	150,000	1					7,500	Apl.	1883	.01
123	Sierra Butte, G.	Cal.,	2,325,000	232,500	10					1,568,140	Apl.	1888	.12½
124	Sierra Nevada, G. &	Nev.	10,000,000	100,000	100	6,250,000	Oct.	1889	.50	103,000	Jan.	1871	1.00
125	Sierra Nevada, S. L.	Idaho	1,000,000	1	1	*				40,000	May	1889	.02
126	Silver Cord, G. & L.	Colo.	4,500,000	450,000	10					270,000	Apl.	1889	.10
127	Silver King, S.	Ariz.	10,000,000	100,000	100	50,000	Jun.	1888	.50	1,950,000	July	1887	.25
128	Silver Mg. of L. V.	N. M.	500,000	500,000	1					50,000	June	1889	.05
129	Silverton, G. & L.	Colo.	2,000,000	200,000	10	*				50,000	Nov.	1886	.02
130	Small Hopes Cons., S.	Colo.	5,000,000	250,000	20	*				3,137,500	Jun.	1889	.10
131	Smuggler, S. L.	Colo.	600,000	60,000	10					66,700	Aug.	1883	.25
32	Spring Valley, G.	Cal.,	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan	1881	.25
133	Standard, G. &	Cal.,	10,000,000	100,000	100	25,000	Oct.	1884	.25	8,895,000	Jun.	1888	.05
134	Stormont, S.	Utah	500,000	500,000	1	*				155,000	Nov.	1881	.05
135	St. Joseph, L.	Mo.,	1,500,000	150,000	10	*				844,000	Dec.	1887	.20
136	Surinam, G. &	D. G.	3,000,000	600,000	5					105,000	Nov	1887	.05
137	Swansea, G.	Colo,	600,000	60,000	10	*				9,000	Apl.	1888	.02½
38	Syndicate, G.	Cal.,	10,000,000	100,000	100	38,729	July	1882	.15	48,308	Sept	1885	.10
39	Tamarack, C.	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00	1,080,000	Oct.	1889	3.00
140	Tip Top, S.	Ariz.	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov.	1881	.20
141	Tombstone, G. & L.	Ariz.	12,500,000	500,000	25	*				1,250,000	Apl.	1882	.10
142	United Verde, C.	Ariz.	3,000,000	300,000	10	*				97,500	Feb.	1884	.20
143	Valencia, M.	N. H.	150,000	1,500	100					97,500	Apl.	1886	2.50
144	Viola Lt., S. L.	Idah.	750,300	150,000	5	*				272,500	Oct.	1888	.37½
145	Ward Cons., S. L.	Colo.	2,000,000	200,000	10					10,000	Apl.	1889	.05
146	Yankee Girl	Colo.	2,500,000	250,000	10					1,275,000	July	1887	.10
147	Yellow Jacket, G. &	Nev.,	12,000,000	120,000	100	5,508,000	Mar	1889	.50	2,184,000	Aug	1871	1.50
148	Webb City, L. Z.	Mo.,	55,000	11,000	5					3,300	Jun	1889	.10

NON-DIVIDEND-PAYING MINES

	Name and Location of Company.		Capital Stock.	Shares. No.	Par Value.	Assessments. Total levied.	Date & am't of last.		
1	Agassiz Cons., S. L.	Colo.	$2,500,000	50,000	$50	*			
2	Alloues, G.	Mich	2,000,000	80,000	25	$697,000	Mar.	1889	.50
3	Alpha Con., G. &	Nev.,	3,000,000	30,000	100	588,750	July	1889	37½
4	Alta, S.	Nev.,	10,080,000	100,800	100	2,248,800	Sept	1888	.50
5	Amador, G.	Cal.,	400,000	200,000	2	*			
6	American Flag, S.	Colo.	1,250,000	125,000	10	300,000	Jun	1877	.5
7	Anglo-Montana, Lt.	Mon.	600,000	120,000	5				
8	Appalachian, Lt., G.	N. C.	1,500,000	300,000	5				
9	Astoria, G.	Cal.,	200,000	100,000	2				
10	Barcelona, G.	Nev.,	5,000,000	200,000	25	*			
11	Bechtel Con., G.	Cal.,	10,000,000	100,000	100	173,500	Jan.	1883	.10
12	Belmont, S.	Nev.,	5,000,000	50,000	100	735,000	Apl.	1888	.10
13	Best & Belcher, G. &	Nev.,	10,080,000	100,800	100	2,155,200	Sept	1889	.32
14	Big Pittsburg, & L.	Colo.	20,000,000	200,000	100				
15	Bi-Metallic, S.	Mon.	5,000,000	200,000	25	*			
16	Black Oak, G.	Cal.,	3,000,000	300,000	10	*			
17	Boston Con., G.	Cal.,	10,000,000	100,000	100	170,000	Nov	1883	.25
18	Bremen, S.	N. M	5,000,000	500,000	10	*			
19	Brunswick, G.	Cal.,	2,000,000	400,000	5	*			
20	Bullion, G. &	Nev.,	10,000,000	100,000	100	4,007,000	Aug.	1888	.50
21	Calaveras, G.	Cal.,	500,000	500,000	1	*			
22	Carisa, G.	Wy	500,000	100,000	5	*			
23	Carupano, G. & L. C.	Ven.	200,000	100,000	2	*			
24	Cashier, G. &	Colo.	500,000	250,000	2	*			
25	Castle Creek, G. & S.	Idah.	2,000,000	200,000	10	*			
26	Charles Dickens, G. & S.	Idah.	1,250,000	250,000	5	*			
27	Cherokee, G.	Cal.,	1,500,000	150,000	10				
28	Chollar, S.	Nev.,	11,200,000	112,000	100	1,484,000	July	1889	.50
29	Cleveland, T.	Dak.	1,000,000	500,000	2	*			
30	Colchis	N. M.	500,000	50,000	10				
31	Commonwealth, S.	Nev.	10,000,000	100,000	100	170,000	Nov	1888	.50
32	Comstock, G. & S.	Nev.	10,000,000	100,000	100	30 000	Mar.	1887	.15
33	Con. Imperial, G. & S.	Nev.,	5,000,000	50,000	100	1,800,000	Nov.	1888	.05
34	Con. Pacific, G.	Cal.,	6,000 000	60,000	100	186,000	Feb	1889	.15
35	Cons. Silver, S.	Mo.,	2,500,000	250,000	10				
36	Courtlandt	Colo.	500,000	50,000	10				
37	Crescent, S. L.	Colo.	3,000,000	300,000	10	*			
38	Crocker, G. &	Ariz.	10,000,000	100,000	100	125,000	Jun.	1889	.10
39	Crowell, G.	N. C.	500,000	500,000	1				
40	Dahlonega, G.	Ga.,	250,000	250,000	1	*			
41	Dandy, S.	Colo.	5,000,000	500,000	10				
42	Dardanelles, G.	Cal.,	1,000,000	100,000	10	*			
43	Davis, G. &	Colo.	1,500,000	300,000	5	*			
44	Denver City, S.	Colo.	5,000,000	500,000	10				
45	Denver Gold, G.	Colo.	300,000	60,000	5	*			
46	Durango, G.	Colo.	500,000	500,000	1				
47	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	990,000	Mar.	1886	1.00
48	El Cristo, G. &	U.S.C	1,000,000	500,000	2	*			
49	El Dorado, G.	Cal.,	1,000,000	250,000	4	*			
50	El Talento, G.	U.S.C.	1,000,000	500,000	2	*			
51	Empire, S.	Utah	10,000,000	100,000					
52	Eureka Tunnel, S. L.	Nev.,	10,000,000	100,000	100				
53	Exchequer	Nev.	10,000,000	100,000	100	515,000	Apl.	1889	.2
54	Found Treasure, G. &	Nev.,	10,000,000	100,000	100	30,530	Apl.	1889	12½
55	Gogebic L. Syn., I.	Wis.	5,800,000	200,000	25	*			
56	Gold Cup, G.	Colo.	500,000	500,000	1	*			
57	Golden Era, S.	Mon.	2 000,000	200,000	10	*			
58	Gold Placer, G.	Colo.	5,000,000	200,000	25	229,314	Dec.	1886	.25
59	Gold Rock, G.	Cal.	1,000,000	500,000	2	*			
60	Goodshaw, G.	Cal.,	10,000,000	100,000	100				
61	Grand Belt, C.	Tex.	12,000,000	120,000	100				
62	Grand Combination, G.	Colo.	800,000	80,000	10	*			
63	Great Romance, G.	U.S.C	1,000,000	500,000	2	*			
64	Gregory-Bobtail, G.	Colo.	550,000	550,000	1	*			
65	Gregory Con., G.	Mon.	3,000,000	300,000	10				
66	Harlem M. & M. Co., G.	Cal.,	1 000,000	200,000	5	*			
67	Head Cent. & Tr. & G.	Ariz.	10,000,000	100,000	100				
68	Hector, G.	Cal.,	1,500,000	300,000	5	45,000	Jan.	1889	.15
69	Highland, G.	Mich	500,000	25,000	20	*			
70	Hollywood	Cal.,	200,000	100,000	2	*			
71	Hortense, S.	Colo.	2,000,000	200,000	10	*			
72	Huron, C.	Mich	1,000,000	40,000	25	280,000	May	1887	3.00
73	Iron Gold & Silver, S.	N. M.	2,000,000	200,000	10	*			
74	Iron Hill, S.	Dak.	1,000,000	40,000	25	*			
75	Iroquois, S.	Mich	1,250,000	50,000	25	*			
76	J. D. Reymert	Ariz.	10,000,000	100,000	100	*			
77	Julia Cons., G. &	Nev.,	11,000,000	110,000	100	1,660,000	Jan.	1889	.10
78	Kearsarge, C.	Mich	1,250,000	50,000	25	190,000	Oct.	1887	1.00
79	Lacrosse, G.	Colo.	1,000,000	100,000	10	*			
80	Lee Basin, G. & L.	Colo.	5,000,000	500,000	10	*			
81	Mammoth Bar, G.	Cal.,	10,000,000	100,000	100	50,000	Dec.	1881	
82	May Belle, G.	Cal.,	10,000,000	100,000	100	84,000	Mar.	1884	.15
83	Mayflower Gravel,	Cal.,	1,000,000	100,000	10	485,000	Jan	1889	.50
84	Medora, G.	Dak.	250,000	250,000	1	*			
85	Mexican, S. &	Nev.	10,000,000	100,000	100	2,775,760	July	1889	.25
86	Middle Bar, G.	Cal.,	400,000	200,000	2	*			
87	Mike & Starr, S. L.	Colo.	1,000,000	200,000	5	*			
88	Monitor, G.	Colo.	100,000	100,000	1	*			
89	Moose Silver, S.	Colo.	3,000,000	300,000	10	*			
90	Mutual Mg. & Sm.	W'sh	10 0,000	100,000	1	*			
91	Native, C.	Mich	1,000,000	40,000	25				
92	Neath, G.	Colo.	1,000,000	100,000	10	*			
93	Nevada Queen, S. &	Nev.,	10,000,000	100,000	100	230,000	Jun.	1889	
94	New Germany, G.	N. S.	100,000	100,000	1	*			
95	New Pittsburg, S. L.	Colo.	2,000,000	200,000	10	*			
96	N. Commonw'h, S.	Nev.	10,000,000	100,000	100	60,000	Apl.	1889	.30
97	North Standard, G.	Cal.,	10,000,000	100,000	100	20,000	Nov		
98	Ophir Gravel	Cal.,	800,000	80,000	10	208,000	Dec.	1881	.10
99	Oneida Chief, S.	Colo.	500,000	125,000	100	*			
100	Oriental & Miller, S.	Nev.,	10,000,000	400,000	25				
101	Osceola, G.	Nev.,	5,000,000	50,000	100				
102	Overman, G. &	Nev.	11,520,000	115,200	100	3,794,660	July	1889	.25
103	Park, S.	Utah	2,000,000	200,000	10				
104	Peer, S.	Ariz.	10,000,000	100,000	100	155,000	Sept	1889	.10
105	Peerless, S.	Ariz.	10,000,000	100,000	100	370,000	Mar.	1889	.25
106	Phenix	Ariz.	500,000	500,000	100				
107	Phenix, G. & S.	Ark.	5,000,000	200,000	250	*			
108	Phenix Lead, S. L.	Colo.	100,000	100,000	1	*			
109	Pilgrim, G.	Cal.,	600,000	300,000	2	*			
110	Potosi, S.	Nev.,	11,200,000	112,000	100	1,461,600	Sept	1889	.50
111	Prosperine, G. & S.	Cal.,	250,000	250,000	1	*			
112	Puritan & G.	Colo.	1,500,000	150,000	10				
113	Quincy	Colo.	3,000,000	300,000	10				
114	Rappahannock, G. &	Va.,	250,000	250,000	1	*			
115	Red Elephant, S.	Colo.	500,000	500,000	1	*			
116	Ropes, G. &	Mich	2,000,000	80,000	25	103,200	July	1887	.50
117	Russell, G.	Cal.,	1,500,000

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Oct. 26.		Oct 28.		Oct. 29.		Oct 30.		Oct. 31.		Nov. 1.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alice, Mont.	....	.....	....	....	.90	....	....	....	.90	....	....	....	500
Argenta, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Basic, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Belcher	....	.....	2.60	....	....	....	....	....	....	2.60	....	....	35
Belle Isle, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Bodie Cons., Cal.	.75	....	....	....	.90	....	....	....	.60	....	....	....	600
Breese, Colo	....	.....	.15	.13	....	....	....	....	....	....	....	....	1,000
Bulwer, Cal	.25	.....	....	....	....	....	....	....	....	....	....	....	200
Caledonia, Dak	....	.....	2.58	....	2.40	2.25	2.55	....	2.45	2.35	....	....	2,200
Calumet & Hecla	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Choliar, Nev	....	.....	....	....	....	....	....	....	....	2.10	....	....	100
Chrysolite	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Colorado Cent'l, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Cons. Cal. & Va., Nev.	5.50	....	....	....	6.60	....	6 37	6 13	6.88	....	6.88	6 75	1,400
Crown Point, Nev	....	....	2.9	....	....	....	....	....	....	....	....	....	100
Deadwood, Dak	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Eureka Cons.	....	.....	....	....	....	....	4.00	....	....	....	....	....	100
Father de Smet, Dak	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Franklin, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Gould & Curry, Nev.	....	.....	....	....	....	....	2.55	....	....	....	....	....	200
Grand Prize, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Hale & Norcross, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Holyoke, Id	....	.....	....	....	.01	.03	....	....	....	....	....	....	500
Homestake, Dak	....	.....	....	....	....	....	....	....	9.50	....	....	....	100
Horn-Silver, Ut	1.60	1.50	1.60	1.50	1.65	1.55	1 70	1.60	1.75	1.64	1.65	....	5,220
Iron Hill, Dak	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Iron Silver, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Leadville C., Colo.	....	.....	....	....	.10	....	.11	....	.12	....	.12	....	2,550
Little Chief, Colo	....	.....	.36	....	.36	....	....	....	.35	....	....	....	1,200
Little Pittsburg, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Mono, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Moulton, Mont	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Mount Diablo, Nev	....	.....	....	....	....	....	....	....	2.40	....	2.75	....	150
Navajo, Nev	.38	....	....	....	.39	....	.38	....	.40	....	....	....	1,150
North Belle Isle, Nev	....	.....	....	....	.90	....	....	....	.95	....	1.00	....	600
North Star, Cal.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Ontario, Ut.	....	.....	35 50	....	....	....	35 25	..	35.00	....	....	....	137
Opnir, Nev.	....	.....	4.35	....	4 95	4.70	4.90	....	5.00	....	....	....	700
Osceola, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Plutus, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Plymouth, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Quicksilver Pref., Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
" Com., Cal	....	.....	....	....	....	....	....	....	....	6.00	....	....	100
Robinson Cons. Colo.	21	....	....	....	....	....	....	....	.38	....	....	....	238
Savage, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Sierra Nevada, Nev	1.15	....	....	....	....	....	2.20	....	....	....	....	....	200
Silver Cord	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Silver King	....	.....	....	....	45	....	.50	....	....	....	.45	.30	475
Silver Mg. of L V	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Small Hopes	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Standard	....	....	.40	....	.50	.45	....	....	....	....	....	....	500
Ward Con.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Yellow Jacket	....	....	....	....	3.35	....	....	....	....	3.20	....	....	300

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Oct. 26.		Oct. 28.		Oct 29.		Oct 30.		Oct. 31.		Nov. 1.		SALES
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alloues, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Alta, Nev	2.30	....	....	....	....	....	....	....	....	....	2.35	....	2.35
Andes, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Amador, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
American Flag, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Astoria, Cal	.20	....	....	....	.20	....	.20	....	.20	....	.20	....	.....
Barcelona, Nev	....	....	....	....	....	....	.25	....	....	....	.25	....	2,300
Best & Belcher, Nev.	3 25	....	....	....	....	....	....	....	....	....	....	....	200
Brunswick, Cal	....	....	....	....	....	....	....	....	.02	....	.02	....	100
Buffalo Iron Min'g.	....	....	....	....	....	....	....	....	....	....	....	....	500
Bullion, Nev	.65	....	....	....	....	....	70	....	....	....	.70	....	.....
Cashier, Colo	....	....	....	....	....	....	....	....	....	....	....	....	800
Castle Creek, Id	....	....	....	....	....	....	....	....	....	....	....	....	.....
Colchis, N. M	....	....	....	....	....	....	....	....	....	....	....	....	.....
Columbia & Beaver	....	....	....	....	....	....	....	....	....	....	....	....	.....
Commonw'th, Nev.	....	....	....	....	....	....	3.70	....	....	....	....	....	.....
Con. Imperial, Nev	....	....	....	....	....	....	....	....	....	....	....	....	200
Con. Pacific, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Denver City, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eastern Oregon	....	....	....	....	....	....	....	....	....	....	....	....	.....
El Cristo, Rep of Col.	.85	....	....	....	.90	....	1.00	.95	1.00	....	1.00	....	1,200
Excelsior, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Exchequer Nev	.60	....	....	....	....	....	.65	....	....	....	....	....	.....
Hector, Cal	....	....	....	....	....	....	....	....	....	....	....	....	600
Julia, Nev	.30	....	....	....	....	....	....	....	....	....	....	....	.....
Kingst'n & Pemb'ke	....	....	....	....	....	....	....	....	....	....	....	....	400
Kosuth, Nev	....	....	....	....	....	....	14	....	....	....	....	....	.....
Lacrosse, Colo	....	....	....	....	....	....	....	....	....	....	....	....	300
Lee Basin, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mexican, Nev	3 75	....	....	....	4 20	....	....	....	....	....	4 30	....	.....
Middle Bar, Cal	....	....	....	....	....	....	....	....	....	....	....	....	550
Monitor, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mutual Sm. & M. Co	1.50	....	1 45	....	1.50	....	1.50	....	1 45	....	1 45	....	1,700
Nevada Queen, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. Com'nw'th, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Occidental, Nev	1.10	....	1 15	....	1.30	1.25	1.35	....	1 40	1.35	1.35	....	2,860
Oriental & Mil., Nev	....	....	....	....	....	....	.05	.04	....	....	....	....	700
Phœnix of Ariz	.60	....	.62	....	.62	....	.59	.50	.56	....	....	....	9,100
Potosi, Nev	....	....	....	....	....	....	....	....	2 3	....	2.05	....	200
Rappahann'k, Va	.05	....	.05	....	.05	....	.06	.05	.16	....	.06	....	10,400
S. Sebastian, San S	....	....	....	....	....	....	....	....	.30	....	.30	....	200
Scorpion, Nev	....	....	....	....	....	....	.30	....	....	....	....	....	300
Shoshone Idaho	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Hill, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Queen	....	....	....	....	....	....	....	....	....	....	....	....	.....
Stanislaus, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sutro Tunnel, Nev	....	....	....	....	....	....	.09	....	.09	....	....	....	700
" Trust Cert.	....	....	....	....	.55	....	....	....	....	....	....	....	1,400
Tornado, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Union Cons., Nev	....	....	2.95	....	....	....	....	....	....	....	....	....	700
United Copper	1.20	....	1.15	....	1 15	....	1 20	....	1.20	....	1 20	....	1,100
Utah, Nev	.85	....	....	....	....	....	....	....	....	....	.90	....	300

*Ex. dividend †Dealt in at the New York Stock Ex. Unlisted securities. ‡Assessment unpaid. Dividend shares sold, 20 866. Non-dividend shares sold, 41.710. Total New York, 62,575.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY	Oct. 25.		Oct. 26.		Oct. 28.		Oct. 29.		Oct. 30.		Oct. 31.		SALES.
Atlantic, Mich.	9.00	.....	9 50	9.00	.. ..	.. ..	9.50	.....	9.75	.....	10.00	....	340
Bodie, Cal.	....	.....	....	.....	....	....	....	....	....	....	....	....	.....
Bonanza Developm't	....	.....	....	.....	.50	....	.53	....	.53	....	....	....	400
Bost. & Mont., Mont.	35 75	.....	35 75	35.50	35.5	35.25	35 50	35.00	35.75	35.50	37.75	35.75	3,131
Breese, Colo	....	.....	....	.....	.19	....	19	....	.19	....	....	....	750
Calumet & Hecla, Mich.	221	2 0	220	....	220	218½	220	....	220	219	224	220	551
Catalpa, Colo	..	....	....	.....	.12	....	.11	....	.11	....	....	....	1,000
Central, Mich	....	.....	....	.....	....	....	....	....	....	....	....	....	.....
Chrysolite, Colo	....	.....	....	.....	....	....	....	....	....	....	....	....	1,500
Con. Cal. & Va., Nev.	....	....	....	.....	....	....	....	....	....	....	....	....	.....
Dunkin, Colo	.75	....	....	.....	.75	.70	.70	....	.70	....	....	....	1,300
Enterprise	....	.....	....	.....	....	....	....	....	....	....	....	....	300
Franklin, Mich.	10.00	.....	....	.....	10.00	.....	10.00	.....	10.00	10 25	11.00	10.38	1,015
Hale & Norcross, Nev.	....	.....	....	.....	....	....	....	....	....	....	....	....	.....
Honorine, Utah	....	.....	....	.....	.22	.....	.32	....	....	....	....	....	400
Little Chief, Colo	....	.....	....	.....	....	....	....	....	....	....	....	....	.....
Little Pittsburg, Colo.	....	.....	....	.....	....	....	....	....	....	....	....	....	.....
Martin White, Nev	....	.....	....	.....	....	....	....	....	....	....	....	....	.....
Moulton	....	.....	....	.....	....	....	....	....	....	....	....	....	100
Napa, Cal	....	.....	....	.....	3.88	....	....	....	....	....	....	....	.....
Ontario, Utah	....	.....	....	.....	....	....	....	....	....	....	....	....	.....
Osceola, Mich.	10.50	.....	10.50	....	11 00	....	....	....	10.25	....	12.00	11.00	196
Pewabic, Mich.	....	....	....	....	3.00	....	....	....	....	....	....	....	50
Quincy, Mich.	51.00	....	....	....	51.75	51.50	....	....	52.50	....	54 50	54.00	127
Ridge, Mich	....	.....	....	.....	....	....	.88	....	....	....	1.00	....	400
Sierra Nev., Nev	....	.....	....	.....	....	....	....	....	....	....	....	....	.....
Silver King, Ariz	....	.....	....	.....	....	....	....	....	....	....	....	....	.....
Standard, Cal	....	.....	....	.....	....	....	....	....	....	....	....	....	.....
Tamarack, Mich.	117	116	116	....	117	.....	118	117	123½	118	128	124½	561

NAME OF COMPANY.	Oct 25.		Oct. 26.		Oct. 28.		Oct. 29.		Oct. 30.		Oct. 31.		SALES.
Alloues, Mich.	....	.....	....	....	.60	.....	.63	.....	....	....	1.00	.75	2,000
Arnold, Mich.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Aztec, Mich	....	.....	....	....	....	....	....	....	.05	....	....	....	100
Bowman	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Butte & Bost., Mont.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Canada	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Cashier, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Crescent, Colo	....	.....	....	....	.06	.....	.06	....	.06	.....	....	....	1,500
Denver City, Colo.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Don Enrique, N M.	....	.....	....	....	....	....	.30	....	.10	....	....	....	300
Everett, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Hanover, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Humboldt, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Hungarian	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Huron, Mich	....	.....	....	....	....	....	....	....	....	....	.75	....	100
Kearsarge, Mich.	5.00	....	5.00	.....	5.50	5.00	5.55	5.13	6.00	5 25	6.75	6.25	2,925
Menard, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
National, Mich	....	.....	....	....	....	....	....	....	....	....	1.00	.88	850
Oriental & M., Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Phœnix, Ariz	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Pontiac, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Rappahannock, Va.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Rockland	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Santa Fe, N. Mex	....	.....	....	....	.55	....	.55	.50	.55	.50	.55	.50	5,100
Security, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Shoshone, Idaho	....	.....	....	....	....	....	....	....	....	....	....	....	.....
South Side, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
St. Louis Cop., Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Sullivan, Dak	....	.....	....	....	....	....	....	....	....	....	....	....	.....

Boston: Dividend shares sold, 10,321. Non-dividend shares sold, 2,775. Total Boston, 23,096.

COAL STOCKS.

NAME OF COMPANY.	Par v'l of sh'rs.	Oct. 26.		Oct. 28.		Oct. 29.		Oct. 30.		Oct. 31.		Nov. 1.		Sales
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
American Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cambria Iron	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cameron Coal & Iron Co	....	....	....	....	....	....	....	7	....	....	....	....	....	200
Ches. & O. RR	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chic. & Ind. Coal RR	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref.	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Col. & Hocking Coal	100	18	17	....	....	....	....	....	....	....	....	....	....	310
Col., C. & I	100	32½	32¼	32⅞	32⅝	33	31½	33	32¼	....	....	32⅜	....	1,460
Consol. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Del. & H. C	100	150	....	150	149¼	149	148¼	149¾	....	148⅛	148⅛	149	....	649
D., L. & W. RR	50	144	143½	143½	142⅝	142½	140⅞	141¾	140¾	141½	140½	141⅞	140¾	82,650
Hocking Valley	100	....	....	16½	....	16½	....	....	....	....	....	17	....	300
Hunt. & Broad Top	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref.	....	....	....	....	....	....	....	....	....	45	....	....	....	5
Lehigh C. & N.	50	55	....	55	54⅞	54⅞	54¾	54½	....	54¾	....	....	....	839
Lehigh & W. B. Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Lehigh Valley RR.	50	57⅜	....	53⅜	53¼	53⅛	....	53⅛	53	53	....	....	....	1,377
Marshall Con. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mahoning Coal	100	....	....	....	....	....	....	....	....	....	....	50	....	100
Do. pref.	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Maryland Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Morris & Essex	100	....	....	151¾	....	....	....	....	....	....	....	....	....	28
New Central Coal	50	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. J. C. RR.	100	125	124½	124¾	....	124½	....	124	123½	123¾	123	124	122¾	2,100
N. Y. & S. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. Y., Susq. & Western	100	8½	....	8¾	8¾	8¾	8¼	8¾	8½	8¼	....	8⅝	....	1,496
Do. pref.	100	35½	35	....	....	34⅞	....	34⅝	....	....	....	34¼	....	900
N. Y. & Perry C. & I.	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Norfolk & Western R.R.	50	....	....	....	....	....	....	....	....	19	....	....	....	200
Do. pref.	50	56	....	55⅜	55½	....	....	....	....	55¾	....	....	....	506
Penn. Coal	50	....	....	....	....	....	....	....	....	....	....	....	....	.....
Penn. RR.	50	54⅜	54¼	54⅜	54⅛	54⅛	54	54⅛	54	54¼	54	....	....	3,097
Ph. & R. RR.**	....	44⅞	44⅛	44½	43¾	43⅝	42⅝	43¼	42¼	43	42⅜	43	42⅛	219,643
Sunday Creek Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref.	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tennessee C. & I. Co.	....	53¾	53¼	55⅝	53⅜	55½	55	56	53⅜	59⅞	56¼	62	59	23,610
Do. pref.	100	....	....	100	....	....	....	....	....	....	....	....	....	100
Westmoreland Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	.....

**Of the sales of this stock, 42,309 were in Philadelphia, and 177,334 in New York. Total sales, 339,570.

San Francisco Mining Stock Quotations.

COMPANY	CLOSING QUOTATIONS. Oct. 25.	Oct. 26.	Oct. 28.	Oct. 29.	Oct. 30.	Oct. 31.
Alpha						
Alta	2 25	2.30	2.15	2.15	2.25	2.20
Belcher						
Belle Isle						
Best & Bel.	3.15	3.40	3.80	3.80	3.95	3.90
Bodie		.80	.80	.80	.75	
Bulwer		.25				.25
Challar	1.60	1.70	1.95	1.95	2.10	2.05
C'm'weal'h	2.80	3.00		3.05	3.00	3.00
Con. C. & V	5.50	5.88	6 63	6.63	6.75	6.75
Con. Pac.						
Crown Pt.	2.85	2.95	3.05	3.05	3.05	3.05
Eureka C.	4 20				4.25	
Gould & C.	1.60	1.60	2.00	2.00	1.95	1.90
Grd. Prize.						
Hale & N.	3.20	3.15	3.15	3.15	3.25	3.25
M. White						
Mexican	3.50	3.80	4.40	4.40	4.30	4.25
Mono	.50	.60			.65	
Mt. Diablo						
Navajo						
Nev. Queen	.70		.60	.60	.60	.65
N. Belle I	.85	.85	.8		.85	.90
Occidental						
Ophir	4.20	4.50	4.95	4.95	5.00	5.13
Potosi	1.60	1.75	1.90	1.90	2.10	2.00
Savage	1.60	1.65	1.95	1.95	2.10	2.00
Sierra Nev	1.75	1.80	2.15	2 15	2.20	2.10
Union Con.		3.00	3.25	3 25	3.25	3 20
Utah		.75	.90	.90	.90	.85
Yellow Jkt.		3.30	3.25	3.25	3.25	3.20

STOCK MARKET QUOTATIONS

Baltimore, Md.

COMPANY.	Bid.	Asked.
Atlantic Coal	1.00	1.50
Balt. & N. C.	....	.15
Big Vein Coal	....	1.50
Conrad Hill	....	.15
Cons. Coal	22@22¼	....
Diamond Tunnel	.40	.50
George's Crk. C	....	1.15
Lake Chrome	.05	....
North State (Balt.)	....	....
Silver Valley	....	....

Prices bid and asked during the week ending Oct. 31st, 1889.

Birmingham, Ala.

COMPANY.	Bid.	Asked.
Ala. Con. C. & C. Co.	....	$23
Ala. R. Mill Co.	....	$60
*Alice Furnace,	....	....
Anna Howe G. Mg. Co.	$⅜	$⅛
Bess. Land Co.	$22½@$23¾	$54
Bir. Mg.& Mfg.	....	$1'20
Broken Arrow.	....	$3¾
Camille Gold Mg. Co.	½	⅝
De Bardeleben C. & I. Co.	$56	....
Decat. L. Imp.	....	$1¼
DecaturMin.L.	$20	....
Enterprise Mfg.	....	$38@$40
*Eureka	....	$100
Florence L. & Mg. Co.	....	†19½@$20
Hen. S. & M.Co	$50@$56	$60@$80
Jagger Towley C. & C.	....	$11@$11½
Mag-Ellen	....	$9⅔
Mary Lee C. & R. Co.	$30	$50
Sheffield C & I. Co.	$55	†65
Sloss I. & S.	....	$44
†Sloss I. & S.	....	....
††Sloss I. & S.	....	....
Tuscaloose C. I. & L. Co	$19⅛	....
Tenn.C. & I. Co.	$50½	$51¼
" pref.	$100	....
Woodstock I.Co.	$60¾	$62½

Prices bid and asked during week ending Oct. 26.

* Bonds. † First mortgage. †† Second mortgage.

Denver, Colo.

COMPANY.	H.	L.	Sales.
Allegheny, Colo	.45	.40	10,100
Amity "	.21	.18	84,700
Brownlow "	.52¼	.47½	25,100
Calliope "	.47½	.47½	500
Claudia, J., "	.27	.17	78,100
Clay County "	....	....	....
Hard Money "	.16	.12	400
Legal Tender "	.09	.07	5,700
Matchless "	1.37½	1.15	20,700
May-Mazeppa"	.38	.33	200,000
Mollie Gibson"	.47	.45	1,400
Morning Glim"	.27	.23	145,800
Puzzler "	.18	.14	7,300
Silver Cord "	.80	.80	200
Total	....	....	580,000

Prices during the week ending Oct. 28, 1889.

Kansas City, Mo. Oct. 28.

COMPANY.	Par value.	Bid.	Asked.
Ben Harrison	..	$25.00	$35.00
Burch, L. & Z., Mo.	1	.20	.30
Hillsboro Gold	....	....	....
Farmers' Coal Co	....	50.00	75.00
Ida Hill, S., N. Mex	100	90.00	100.00
K. C, Colo.	....	....	1.00
Kentuck, Z., Mo.	1	....	.02
La Motte, Mo.	100	98.00	100.00
Maverick, S., Colo.	10	.97	1.00
Minnequa Zinc	....	.25	.35
Sonora, G. & S., Mex.	10	1.00	1.02
Standard, S. S., Colo.	....	10.00	....
Silver Monument	....	....	3.00
Templar, N. Mex.	1	.08	.15
The Sylph	....	....	2.50
Webb City, L. Z., Mo.	5	5.65	....
Wichita, L. Z., Kan.	100	....	40.00
Granite	....	....	....

Pittsburg, Pa.

COMPANY.	H.	L.	Closing
Allegheny Gas Co.	....	....	....
Bridgewater Gas Co.	$30.00	$25.00	$25.00
Charlotte Mg. Co.	....	....	....
Chartiers Val. Gas	*18.25	*45.00	*45.00
Columbia Oil Co.	3.00	2.75	2.88
Consolidated Gas Co.	40.00	40.00	40.00
Forest Oil Co.	....	....	....
Hazlewood Oil Co.	50.00	50.00	50.00
Hidalgo Mg. Co	2.13	2.13	2.13
La Noria Mining	*.88	*.75	*.88
Luster Mg. Co.	10.00	10.00	10 00
Manufact. Gas Co.	....	....	....
Nat. Gas Co. of W. Va	78.00	78.00	78.00
N.Y.& Clev.Gas Coal	36 00	33.50	34.25
Ohio Valley Gas	31.75	31.75	21.75
Pennsylvania Gas	....	....	....
People's Nat. Gas Co.	*14.50	45.00	45.00
People's N. G. & P. Co.	*17.25	*16.25	*17.25
Philadelphia Co.	*32.88	*31 50	*32.63
Pine Run Gas Co.	....	....	....
Pittsburg Gas	66.00	64.00	66.00
Silverton Mg. Co.	....	....	....
South Side Gas.	....	....	....
Tuna Oil	....	....	....
Union Gas Co.	....	....	....
Washington	....	....	....
W'house A. B. Co.	*114.50	*112.50	*113.00
W'house Brake Co.	....	....	....
W'house E. Light	*18.38	*17.88	*18.00
Westm'land & Cam.	....	....	....
Wheeling Gas	*30.00	*28.00	*29.00
Yankee Girl Mg.	3.00	2.00	2.75

Sales during the week ending Oct. 30:

La Noria	100 shares.	.88
Philadelphia Co.	957 "	$30.75@$32.00
West'house Elect.	100 "	$48.00

* Actual selling price. †Ex-dividend.

St. Louis. Oct. 30.

CLOSING PRICES.

COMPANY.	Bid.	Asked.
Adams, Colo.	$ .25	....
American & Nettie	2.57½	$2.67½
Aztec, N. Mex.	.18¾	.22½
Black Oak, Cal.	.05	.06
Black Spar	....	....
Bromen	.02	.02½
Buckskin	.04	.04½
Carriboo, Idaho	.01	.02
Central Silver	.42½	.45
Cleveland, Colo.	....	....
Cleveland, Idaho	.57½	.62½
Coeur d'Alene	....	1.10
Golden Era, Mont.	.10	.12
Golden King	.26¼	.31¼
Golden West	....	....
Gold Pioneer	....	....
Gold Point	....	....
Gold Run	....	....
Granite Mountain, Mont.	40.00	....
Ingram	....	....
Iron Clad	.17½	....
Ivanhoe, Colo.	.10	....
I. X. L., Colo.	.06	.07
Keystone	.03¼	.04½
La Union	.02	.03
Little Giant	....	....
Major Budd, Mont.	.22½	.23¾
Mexican Imp., Mex.	.22½	.25
Michael Breen	1.15	1.20
Montrose Placer	....	.50
Mountain Key	.80	.85
Mountain Lion	.27½	.30
Neath, Colo.	.11	.14
Old Colony	....	....
Old Jesuit	.02	.02½
Pat Murphy, Colo.	....	....
Phillips, Colo.	.68¾	.72½
Pine Grove, Idaho	.03½	.04
Queen of the West, Idaho	.12	.12½
Raspberry, Mont.	....	.25
San Francisco, Mont.	.07½	.08
San Pedro	....	....
Small Hopes, Colo.	.90	.97½
Silver Age, Colo.	2.15	2.60
Tourtelotte, Colo.	.03½	.04½
West Granite, Mont.	1.05	1.07½
Wire Patch	.22½	.26¼
Yuma, Ariz.	.10	.41¼

Trust Stocks. Nov. 1.

The following closing quotations are reported to-day by C. I. Hudson & Co., members of New York Stock Exchange:

CERTIFICATES.

American Cotton Oil	$33¼	@$33⅜
Cattle Trust	14	@ 16
Distillers' & Cattle Feeders'	41	@ 43⅜
Linseed Oil		@ 47¼
National Lead	19¾	@ 19⅞
Natural Gas		@120
Standard Oil		@168
Sugar Refineries	72⅛	@ 72¼

Sales at the New York Stock Exchange week ending Nov. 1:

	Sales.	Price H.	Price L.
American Cotton Oil	302,720	43½	32½
National Lead	86,550	22⅜	19¼
Sugar	135,684	74¼	67½

Foreign Quotations.

London.	Highest.	Oct. 19. Lowest
Alturas Gold, Idaho	....	....
Arizona Copper, Ariz.	18s. 6d.	18s.
California Gold, Colo.	3s.	3s.
Callao Bis, Venz	7s. 6d.	6s. 6d.
Carlisle, N. Mex	6s. 3d.	5s 9d.
Comstock, Utah	....	....
Cons. Esmeralda, Nev.	....	....
Denver Gold, Colo.	1s 9d.	1s. 3d.
Dickens Custer, Idaho.	3s. 3d.	2s. 9d
Eberhardt, Nev	....	....
El Callao, Venezuela	£3½	£3
Elmore, Idaho	....	....
Empire, Mont	4s. 6d.	3s.
Flagstaff, Utah	2s.	1s. 6d
Garfield, Nev	3s. 9d.	3s.
Gold Hill, N. C.	1s 9d.	1s. 3d.
Hambley Freehold N.C.	....	....
Ilex, Cal	⅜	⅛
Jay Hawk, Mont	....	....
Josephine, Cal	7s.	5s.
Kohinoor, Colo.	2s. 9d.	2s. 3d.
Mason & Barry, Port.	6 1-16s.	5 15-16s.
Montana Lt., Mont	£ ¾	£1⅝
New California, Colo.	....	....
New Consolidated	....	....
New Eberhardt, Nev.	6s. 2d.	6s. 1d.
New Emma, S., Utah.	3s. 6d.	3s.
New Hoover Hill, N. C.	....	....
New La Plata, Colo.	1s. 6d.	1s.
Old Lout, Colo.	....	....
Pittsburg Cons., Nev.	£⅜	£¼
Quebrada, Venezuela	....	....
Richmond Con., Nev.	....	....
Ruby&Dunderberg, Nev	2s 3d.	1s. 9d.
Russell Gold, N. C.	2s. 9d.	2s. 3d.
Sam Christan, N. C.	4s.	3s. 6d
Sierra Buttes, Cal.	£7-16	£7-16
Stanly, N. C.	4s.	3s.
United Mexican, Mex.	7s.	5s.
U. S. Placer, Colo.	8s. 6d.	7s. 6d.
Viola Lt., Idaho	1s. 3d.	9d.

Paris.		Oct. 17.
Belmez, Spain	550.00	550 00
Boleo, Mex	325 00	325,00
Callao Bis, Venez	12.50	12.50
East Oregon, Ore.	23.00	23 00
Forest Hill Divide, Cal.	300.00	300.00
Golden River, Cal	350.00	350.00
" " parts	61.25	65.25
Lexington, Mont.	120.00	120.00
" parts	4.25	4.25
Ouray, Colo.	21.00	21.00
Rio Tinto, Spain	308.75	308 75
Tharsis, Spain	97.50	97.50

CURRENT PRICES.

These quotations are for wholesale lots in New York.

CHEMICALS AND MINERALS.

Acid—Acetic, ℔ 100 lbs. $2.00
Muriatic, 18°, ℔ 100 lbs. 1.00@1.50
Muriatic, 20°, ℔ 100 lbs. 1.12½@1.75
Muriatic, 22° ℔ 100 lbs. 1.37½@2.00
Nitric, 36°, ℔ 100 lbs. 4.00@4.25
Nitric, 42°, ℔ 100 lbs. 6.00@6.25
Oxalic, ℔ 100 lbs. .9.50@10.50
Sulphuric, 60°, ℔ 100 lbs. 80@1.25
Sulphuric, 66°, ℔ 100 lbs. 1.00@1.75

Alkali—
Refined, 48 p. c. 1.40@1 50
Refined, 58°. 1.35@1.40

Alum—Lump, ℔ lb. 1¾
Ground, ℔ lb. 1¾@2
Lump ℔ ton, Liverpool £4 17 6
Sulphate of Alumina, ℔ ton £4 10

Aqua Ammonia—18°, ℔ lb. 4¾
20°, ℔ lb. 6
22°, ℔ lb. 6@7
26°, ℔ lb. 10@11

Ammonia—Sul., ℔ 100 lbs. 3.05
Carb, per lb. 7½@8½

Arsenic—White, powdered, ℔ lb. 3½@3¾
Red. ℔ lb 5¾@6¾
White, at Plymouth, ℔ ton. £12 2 6d.

Asbestos—Am., p. ton $50@$300
Italian, p. ton, c. i. f. L'pool £18@£25

Asphalium—P. ton 13.00

Asphaltum—Prime Cuban, ℔ lb. 4½@5½c.
Hard Cuban, ℔ ton $28.00
Trinidad, refined, ℔ ton $30.00

Barytes—Sulph., Am. prime white 17@20
Sulph., foreign, floated, p. ton 19½@21.50
Sulph., off color, p. ton 11.50@14.00
Carb., lump, f.o.b. L'pool, ton £6
No. 1, casks, Runcorn " £4 10 0
No 2, bags, Runcorn " " 3 15 0

Bleach—Over 35 p.c., ℔ lb. 1.75@1.85

Borax—Refined, ℔ lb. 9½@9⅝
Concentrated 7¾@8⅛
Refined at Liverpool, ℔ ton £29

Brimstone—*See Sulphur.*

Bromine—℔ lb. 37@38

Chalk—℔ ton. 1.75
Precipitated, ℔ lb. 4¾@5

China Clay—English, ℔ ton 13.50@15.50
Southern, ℔ ton 13.50

Chrome Yellow—℔ lb 10@25

Cobalt—Oxide, ℔ lb. 2.60@2.90

Copper—Sulph. English Wks, ton $20@$21

Copperas—Common, ℔ 100 lbs. 70
Best, ℔ 100 lbs. .75@1.00
Liverpool, ℔ ton, in casks £1 15s.

Cream of Tartar—Am. 99% 23½
Powdered, 99 p. c. 23

Emery—Grain, ℔ lb. 4½@5
Flour, ℔ lb 3¾@3½

Feldspar—Ground, ℔ ton 15.00

Fuller's Earth—Lump, ℔ bbl. .90@95
Powdered, ℔ lb. 1¾@2

Gypsum—Calcined, ℔ bbl. 1.25@1.50

Iodine—Resublimed 2.75

Kainit—℔ ton 9.75@10.00

Kaolin—*See China Clay.*

Lead—Red, ℔ lb. 6¾@9
White, American, in oil, ℔ lb. 6¾@7¼
White, English, ℔ lb 8½@8¾
Acetate, or sugar of, white 15@16

Lime Acetate—Amer. Brown .95@1.00
" Gray 1.75@1.87½

Litharge—Powdered, ℔ lb. 6½@6¾
English flake, ℔ lb. 9@9½

Magnesite—Greek, ℔ ton 20.00

Manganese—Crude, per unit .23@.28
Oxide, ground, per lb 2½@6½

Mercuric-Chloride—(*Corrosive Sublimate*), ℔ lb. 70@72

Mineral Wool—℔ lb. 2

Mica—In sheets according to size, 1st quality, ℔ lb. 25@$6 00

Ochre—Yellow. "B. F.," ℔ ton, f.o.b. mill 30.00
"J. F. L. S.," ℔ lb. ex dock 2½

Phosphate Rock—S. Carolina, per ton o. b. Charleston 5.50@6.75
Ground, ex vessel New York 11.00
Canadian Apatite, lump, f. o. b. at Montreal, ℔ ton 16.00

Phosphorus—℔ lb. 70@75

Plumbago—Ceylon, ℔ lb. 4@5
American, ℔ lb. 5@7

Potassium—Cyanide, ℔ lb. 39@40
Bromide, ℔ lb. 33
Chlorate, ℔ lb. 13@14
Carb. ℔ lb. 4.70@5.50
Caustic, ℔ lb. 7¼@8
Iodide. 2.65@2.70
Muriate, ℔ 100 lbs. 1.80
Nitrate, refined, ℔ lb. 6@8
Bichromate, ℔ lb. 10¼@11
Sulphate, ℔ 100 lbs. 2.30@2.35
Yellow Prussiate, ℔ lb. 17½@18
Red Prussiate, ℔ lb. 42@45

Pumice Stone—Select lumps, lb. 4¼
Original cks., ℔ lb. 1¾@2
Powdered, pure, ℔ lb. 2¼@2½

Pyrites—Non-cupreous, p. units 10d

Quartz—Ground, ℔ ton. 14 00@16.00

Rotten Stone—Powdered, ℔ lb. 3¼@3½
Lump, ℔ lb. 6@10

Salt—Liverpool, ground ℔ sack .75@80
Turk's Island, ℔ bush 2 @2

Salt Cake—℔ lb. 60@62½

Saltpeter—Crude, ℔ lb. 5¼@5½
Refined ℔ lb. 6@8

Soda Ash—Carb., 48 % 100 lbs. 1.40
Caustic, 48 % 1.25
Soda Caustic, 60% 2.55
" " 70% 2.37½@2.45
" " 74-76% 2.37½@2.45

Sal, English, ℔ 100 lbs. .95@1.00
Sal, American, ℔ 100 lbs. .90
Nitrate, 100 lbs. 1.90@1.95

Strontium—Nitrate ℔ lb. 9@9½

Sulphur—Roll, ℔ lb. 1¾
Flour, ℔ lb 2

Crude Brimstone, 2s., ℔ ton 19.75
Crude Brimstone, 3ds, ℔ ton 19 00

Talc—Ground French, ℔ lb. 1¼@1½
Domestic, ℔ ton $18@$20
c. i. f. Liverpool, ℔ ton £4 5

Vermillion—American, ℔ lb. 61
English, ℔ lb. 82@85

Vitriol—(Blue), Ordinary, ℔ lb. 5½@5⅝
Extra, ℔ lb 7

Zinc Oxide—Am., Dry, ℔ lb. 4½
Antwerp, Red Seal, ℔ lb. 6@6½
Paris, Red Seal, ℔ lb. 6½@7
* Spot

THE RARER METALS.

Aluminum—(Metallic), ℔ lb. $2.@$4.00
Sheet, per lb. 6.00@8.00

Arsenic—(Metallic). per lb. .40

Barium—(Metallic), per gram $4.00

Bismuth—(Metallic), per lb. 2.75

Cadmium—(Metallic), per lb. 1.00

Calcium—(Metallic), per gram 10.00

Cerium—(Metallic), per gram 7.50

Chromium—(Metallic), per gram 1.00

Cobalt—(Metallic), per lb. 6.00

Didymium—(Metallic), per gram 9 00

Erbium—(Metallic), per gram 7.50

Gallium—(Metallic), per gram 140.00

Glucinum—(Metallic) per gram 12.00

Indium—(Metallic), per gram 9.00

Iridium—(Metallic), per oz. 7.00

Lanthanum—(Metallic), per gr. 15.00

Lithium—(Metallic), per gram 10.00

Magnesium—Per lb. 4.50

Manganese—Metallic, per lb. 1.10
Chem. pure, per oz. 10.00

Molybdenum—(Metallic), per gm. .50

Niobium—(Metallic), per gram 5.00

Osmium—(Metallic), per oz 65.00

Palladium—(Metallic), per oz. 35.00

Platinum—(Metallic), per oz. 9.00

Potassium—Metallic, per lb. 28.00

Rhodium—(Metallic), per gram. 5.00

Ruthenium—(Metallic), per gm. 5.50

Rubidium—(Metallic), per gram 2.00

Selenium—(Metallic), per oz. 1.80

Sodium—(Metallic) per lb. 2.50

Strontium—(Metallic), per gm. .60

Tantallum—(Metallic) per gram 9.00

Telurium—(Metallic) per oz 15.00

Thallium—(Metallic) per gram .25

Titanium—(Metallic) per gram 2.25

Thorium—(Metallic) per gram 17.00

Tungsten—(Metallic) per oz. 2.25

Uranium—(Metallic), per lb. 5.00

Vanadium—(Metallic), per gm. 22.00

Yttrium—(Metallic), per gram 9.00

Zirconium—(Metallic), per oz. 65.00

RARE MINERALS.

	Per lb.
Molybdenite	$ .32
Gadolinite	2.54
Zyrcon	85@1.00
Cerite	.32
Orthite	.13
Rutile	15@.20
Thorite	10.54
Yttrotitanite	.20
Columbite	.94

BUILDING MATERIAL.

Bricks—Pale, ℔ 1,000 3 25@4.00
Jerseys, ℔ 1,000 5.50@6.50
Up Rivers, ℔ 1000 6 25@7.00
Haverstraw seconds, ℔ 1000 6.75@7.00
Haverstraw firsts ℔ 1,000 7.00@7.25
Fronts, nominal, ℔ 1000.
Croton 14.00@16.00
Wilmington 20.00@21.00
Philadelphia @22.00
Trenton @22.00
Baltimore

Building Stone—Amherst freestone, ℔ cu. ft. 95@1.00
Brownstone, ℔ cu. ft. 1.00@1.35
Granite, rough, ℔ cu. ft 45@1.25
Granite, Scotch ℔ cu. ft. 1.00@1.15

Cement—Rosendale, ℔ bbl .85@1.10
Portland, American, ℔ bbl 2 15@2.45
Portland, foreign, ℔ bbl 2 30@2.40
Portland, " special brands 2.45@2.75
Roman, ℔ bbl. 2.65@2.85
Keene's coarse, ℔ bbl. 4.50@5.50
Keene's fine, ℔ bbl. 7.00@8.25

Slate—Purple and green roofing, ℔ 100 ft. 7.00@7.50
Red roofing, ℔ 100 sq. ft. 12.00
Black, roofing, ℔ 100 sq. ft. 4.25@5.50

Lime—Rockland, common ℔ bbl. 1.00
Rockland, finishing, ℔ bbl. 1.20
St. John, com. and finish, ℔ bbl. .90@.95
Glens Falls, com. and fin., ℔ bbl .85@1.10

Labor—Ordinary, ℔ day 1.50@2.00
Masons, ℔ day 4.00
Plasterers, ℔ day 4.00
Carpenters, ℔ day 3.50
Plumbers, ℔ day 3.50
Painters, ℔ day 2.50@3.50
Stonesetters, ℔ day 3.50@4.00
Tilelayers, ℔ day 3.50@4.50
Bricklayers, ℔ day 4 00

THE ENGINEERING AND MINING JOURNAL will thank any one who will indicate any other articles which might with advantage be quoted in these tables or who will correct any errors which may be found in these quotations.